S

MATERIALS FOR THE STUDY OF BUSINESS

RISK AND RISK-BEARING

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Risk and Risk-Bearing

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EDITOR'S PREFACE

Collegiate training for business administration is now so widely attempted that the time has arrived when experiments should be conducted looking toward the organization of the business curriculum into a coherent whole. Training in scattered "business subjects" was defensible enough in the earlier days of collegiate business training, but such a method cannot be permanent. It must yield to a more comprehensive organization.

There can be no doubt that many experiments will be conducted looking toward this goal; they are, indeed, already under way. This series, "Materials for the Study of Business," marks one stage in such an experiment in the School of Commerce and Administration of the University of Chicago.

It is appropriate that the hypotheses on which this experiment is being conducted be set forth. In general terms the reasoning back of the experiment runs as follows: The business executive administers his business under conditions imposed by his environment, both physical and social. The student should accordingly have an understanding of the physical environment. This justifies attention to the earth sciences. He should also have an understanding of the social environment and must accordingly give attention to civics, law, economics, social psychology, and other branches of the social sciences. His knowledge of environment should not be too abstract in character. It should be given practical content, and should be closely related to his knowledge of the internal problems of management. This may be accomplished through a range of courses dealing with business administration wherein the student may become acquainted with such matters as the measuring aids of control, the communicating aids of control, organization policies and methods; the manager's relation to production, to labor, to finance, to technology, to risk-bearing, to the market, to social control, etc. Business is, after all, a pecuniarily organized scheme of gratifying human wants, and, properly understood, falls little short of being as broad, as inclusive, as life itself in its motives, aspirations, and social obligations. It falls little short of being as broad as all science in its technique. Training

BASIC ELEMENTS OF THE BUSINESS CURRICULUM

CONTROL

1. Communicating aids of control, for example
   - *a*) English
   - *b*) Foreign language
2. Measuring aids of control, for example
   - *a*) Mathematics
   - *b*) Statistics and accounting
3. Standards and practices of control
   - *a*) Psychology
   - *b*) Organization policies and methods

Of problems of adjustment to physical environment
- *a*) The earth sciences
- *b*) The manager's relationship to these

Of problems of technology
- *a*) Physics through mechanics, basic, and other sciences as appropriate
- *b*) The manager's administration of production

Of problems of finance
- *a*) The financial organization of society
- *b*) The manager's administration of finance

Of problems connected with the market
- *a*) Market functions and market structure
- *b*) The manager's administration of marketing (including purchasing and traffic)

Of problems of risk and risk-bearing
- *a*) The risk aspects of modern industrial society
- *b*) The manager's administration of risk-bearing

Of problems of personnel
- *a*) The position of the worker in modern industrial society
- *b*) The manager's administration of personnel

Of problems of adjustment to social environment
- *a*) The historical background
- *b*) The socio-economic institutional life
- *c*) Business law and government

for the task of the business administrator must have breadth and depth comparable with those of the task.

Stating the matter in another way, the modern business administrator is essentially a solver of business problems—problems of business policy, of organization, and of operation. These problems, great in number and broad in scope, divide themselves into certain type groups, and in each type group there are certain classes of obstacles to be overcome, as well as certain aids, or materials of solution.

If these problems are arranged (1) to show the significance of the organizing and administrative, or control, activities of the modern responsible manager, and (2) to indicate appropriate fields of training, the diagram on the opposite page (which disregards much overlapping and interacting) results. It sets forth the present hypothesis of the School of Commerce and Administration concerning the basic elements of the business curriculum, covering both secondary school and collegiate work.

This present volume deals with the problems of risk and risk-bearing.

L. C. Marshall

AUTHOR'S PREFACE

This volume grows out of an effort on the part of the Faculty of the School of Commerce and Administration of the University of Chicago to reorganize its curriculum so as to make its courses correspond to the *functions* performed in the process of providing present-day civilized society with economic goods. In view of the extent to which the book owes its existence to the need of a text to fill a gap in the equipment available for carrying out such a plan, this may be an appropriate place to indicate something of the nature of the instruction scheme in which a course in risk and risk-bearing finds a place.

In his Freshman year, a student regularly takes a sequence of courses dealing with the whole field of economics and business administration, the usual sequence being Industrial Society, Value and Distribution, Business Administration. These courses are designed to give him a view of the whole field with which his later studies have to do, largely for the purpose of enabling him to approach the more detailed courses with a better grasp of the relationship between the things he is at the moment studying and the rest of the economic order. The course in Industrial Society, in particular, concerns itself with the interrelations of the various institutions which make up the economic organization of society.

There follows during the Sophomore and Junior years a group of intermediate courses which together cover the entire field in more detail, each dealing with a specific social-economic function, the institutions through which this function is performed, and the problems of administration which arise out of its performance. These functions are six: production (in the technological sense), finance, marketing, labor, risk-bearing, and social control. Courses dealing with these functions, together with another group which deals with the recording, facilitating, communicating, and computing aids to business administration[1] make up the backbone of the curriculum, and are required of all students, whereas advanced courses dealing with specific problems in these fields (such as investment analysis,

[1] Including accounting, statistics, business communication.

foreign trade, bank management, trade unions) are required only of students specializing in the given field.

Of the six functions referred to, risk-bearing is the most likely to require explanation. As will be seen by an examination of the Table of Contents of this volume, the course out of which it has grown is made up of material much of which has traditionally been presented in courses in the theory of distribution, money and banking, insurance, investments, marketing, and speculation. To some, these elements may perhaps seem incongruous, and it may even be suspected that the principle of selection has been that of lumping together various odds and ends crowded out of other courses. Such a procedure might be justifiable. Indeed, from a practical point of view, one of the direct gains from the organization of the course was that it made possible the offering of what seems to the author an adequate amount of work in life and fire insurance, speculation, and business forecasting to meet the needs of the majority of students, without the necessity of injecting into each subject for administrative reasons a sufficient amount of material to fill out a conventional number of "student hours" to constitute a course.

It is believed, however, that a course in "risk-bearing" has a stronger justification than administrative convenience. The connecting thread which runs through all the material is the influence of uncertainty. Indeed, it might be clearer to designate the course as a study of the influence of uncertainty on business affairs. Throughout most of our academic work in business management, emphasis is laid upon the importance of certainty. We are constantly reiterating the fact that efficient management involves scientific investigation to determine the important facts which bear upon our problems and careful study to insure that our plans shall reflect the significance of these facts. The author has no desire to minimize the force of this teaching. Nevertheless, there are definite limits to the application of scientific method in business. As is pointed out in detail in chapter iii, it is the persistent element of uncertainty which makes necessary the exercise of business judgment, and makes possible the reaping of business profit. The principal topics of this course, business forecasting, investment and speculation, and insurance, serve well to bring out the difference between the two fundamental bases for a judgment of probability, on the one hand formulations of mathematical probabilities based on careful statistical investigation, on the other hand the comparison of data which are never sufficient to permit

an exact estimate of the chances of success or failure from a given line of effort, yet do suffice to furnish a basis for an intelligent choice of alternatives.

So widespread is the custom of including the bulk of the contents of this course under the heading of "finance," that a further comment on the relation of finance to risk-bearing seems pertinent. It is quite possible to define "finance" so broadly as to include under its sway much of the domain here appropriated for "risk-bearing." Indeed, it is possible to bring almost any business problem into the "financial" category, since the results of good or bad management almost invariably, given time enough, take the form of financial advantage or disadvantage. In the author's judgment, however, clearness is gained by restricting the application of the term "financial" to such phases of business management as have to do with the acquisition of capital, the control of funds, the repayment of loans, and similar questions; in short, to the maintenance of an adequate supply of capital (including both that borrowed on short-time instruments and that permanently invested). To include in "finance," as has been done by some writers, such matters as the question whether to expand the scope of one's operations at the height of a boom, or the choice between two price policies, involves an overemphasis on one set of factors which must be considered in deciding such questions, and a neglect of the factors of sales management, technological efficiency, and risk which are more often effective in determining action than are any financial considerations concerning the proposed program.

The section devoted to the business cycle illustrates the point of view upon which the book is based. Traditionally this subject has been assigned to the student of banking. Yet, whether we approach the problem from the angle of business management, and inquire what are the effects of the cycle on the administration of finances, the management of labor, and the production and sales policy, or whether we approach it from the angle of a student of economic theory and inquire whether the causes of the cycle are found in financial, market, or labor conditions, it is perfectly clear that the cycle is not merely a financial phenomenon, but pervades every aspect of our economic life. The common aspect of the problem which the cycle imposes upon the treasurer, the personnel administrator, and the sales manager, is the element of *uncertainty* concerning the decisions other men are making. It is in each case as a risk-

bearer that the manager must reckon with the periodicity of the phenomena with which he deals. The appropriate place for a survey of the causes of the cycle and the methods of forecasting or controlling it is in a course dealing with risk and risk-bearing; the appropriate place for discussion of the details of adjustment of the labor, the financial, and the sales policies to such forecasts, is in courses dealing with those functions.

As is the case with other intermediate courses in the curriculum described above, no attempt is made to cover the entire field in exhaustive fashion. Rather it is intended to present simply the amount of material which every professional student of business can fairly be expected to include in a four year's course, which must include his general business training, his specialized training for his particular line of endeavor, and whatever of literary and scientific education not strictly vocational he may secure in addition. For example, it is anticipated that students taking this course will elect additional work in investment analysis if their major interest is in finance; in insurance, if they expect to enter that field of employment; in marine insurance, either separately or in connection with courses in foreign trade, if they are looking to foreign commerce as a field of life-work, and so on.[1]

Although emphasis has been placed upon the way in which a course in risk and risk-bearing dovetails into a curriculum organized upon a functional basis, the attempt has been to organize the material in such a way that it can be used effectively with students having a different background. It is believed that the material can be presented advantageously to students having no other preliminary training than the customary introductory courses in economics. Colleges whose offerings in economics and business are more limited in number than is the case with the professional school of business may find a course in risk an effective way of reducing the number of courses needed to cover the fields touched upon, thereby making possible more extended work in other fields. The first ten chapters may be used conveniently as the introductory portion of an advanced course in investment analysis. Business men will find little that is new in the discussion

[1] Speculation is treated somewhat more fully than this general plan requires, with a view to making advanced courses unnecessary, chiefly because of the small number of students interested to take advanced courses in this field and the paucity of material for use in such courses.

of their special fields of work, but may find value in the discussion of the interrelations of the different topics presented.

My indebtedness to co-operating friends is very heavy. Dean L. C. Marshall has incurred a burden of responsibility for the appearance of a book dealing with this field, for its inception was due to his suggestion, and his unflagging interest and faith in the project made it possible for the material to be accumulated and subjected to the test of the classroom in its earlier as well as its later stages of development. He has also made innumerable suggestions of detail in connection with the form in which the material is presented. To Professor F. H. Knight, my colleague in two universities, my debt is also unusually great, both for access to preliminary drafts of his book, *Risk, Uncertainty, and Profit,* during the period when my own ideas on the subject were first taking definite shape, and for innumerable helpful suggestions and clarifying criticisms. Professor Leverett S. Lyon has collaborated in the preparation of chapter xii, and has contributed much to the development of my view on many questions of theory. Professor A. S. Keister and Messrs. S. P. Meech and L. W. Mints have used preliminary mimeographed editions as text material, and have given me the benefit of their criticisms. Professors R. W. Stone and C. W. Wassam and Messrs. W. E. Atkins and H. C. Simons have read portions of the manuscript, and I have profited much by their suggestions. Grateful acknowledgment is made of the hearty co-operation of authors and publishers in connection with my requests for permission to use extended quotations. Mr. John E. Partington has rendered efficient aid in the preparation of the index.

C. O. Hardy

Iowa City
April 14, 1923

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CHAPTER I

FORMS AND EXTENT OF BUSINESS RISK

Risk may be defined as uncertainty in regard to cost, loss, or damage. In this definition, emphasis is on the word *uncertainty*. Where destruction or loss of capital is certain in connection with a business process, it can be charged up in advance as a cost. It is not a risk. When the destruction or loss is uncertain, it may be dealt with in accordance with judgments of probability, and presents a problem in risk. In this chapter our task is to make a preliminary survey of the forms and extent of risk involved in present-day economic life.

It is a common statement that risk is universal. As one author puts it:

> The owner of wealth must, if he is rational, invest it in some productive enterprise, unless, under the circumstances, he decides to consume it; and, wherever it is invested, there will be some risk that part of it will be lost by the dishonesty of others, the deterioration in value of the property in which it is embodied, or in change of value of the standard of deferred payment. If he thinks to escape by hoarding it in the shape of specie, robbery is to be feared, to say nothing of the opportunities of gain which are given up. If he decides to consume the wealth at once, he runs the risk of coming to poverty.[1]

Or, in Professor Fisher's words:

> If we take the history of the prices of stocks and bonds, we shall find it chiefly to consist of a record of changing estimates of futurity, due to what is called chance, rather than of a record of the foreknown approach and detachment of income. Few, if any, future events are entirely free from uncertainty. In fact, property, by its very definition, is simply the right to the chance of future services. A mine owner takes his chances as to what the mine will yield; the owner of an orange plantation in Florida takes risks of winter frosts; the owner of a farm takes risks as to the effect of sun and rain and other meteorological conditions, as well as risks of ravages of fire, insects, and other pests. In buying an overcoat a man takes some risk as to its effectiveness in excluding cold, and as to the length of time it will continue to be serviceable.[2]

[1] John Haynes, "Risk as an Economic Factor," *Quarterly Journal of Economics*, IX, 410.

[2] Irving Fisher, *Nature of Capital and Income*, pp. 265–66.

Statements such as these, though strictly accurate, are, nevertheless, apt to give a false impression of the extent, or rather of the importance, of the unknown element in human calculations. All these manifold risks do exist, but most of them are of no practical consequence. The only risks which need be given consideration in a business decision, or for that matter in any other decision, are the cases where the property interest, or other interest, at stake on the outcome of a single uncertainty is *large* relative to the total of which it is a part. For example, the risk of windows being broken by small boys is a real risk for owners of expensive plate glass windows but is of no practical significance to owners of an equally large amount of capital in the form of many small windows.[1] Risk in any practical sense is not present in all our calculations.

Uncertainties of practical importance to the business manager may conveniently be classified in accordance with their origin, as follows:

1. *Risks of destruction of property through the physical hazards of nature:* storm, flood, fire, etc. These are among the most serious hazards in many lines of business, notably in live stock raising and in transportation. Most of the losses caused by hail, flood, and storm would be avoided if we *knew in advance* what conditions to expect. They are part of the cost of our ignorance. To measure the total cost, however, we must add to the actual losses the cost of precautions taken against disasters which never occurred, and the loss of production on account of the existence of these risks.

The magnitude of these losses reflects primarily the extremely rudimentary development of our science of weather forecasting. The extreme range of our ability to forecast deviations of weather from its past average is less than a week, and tolerably accurate forecasts can be made only twenty-four to forty-eight hours in advance. Even this limited range of forecasting, however, has tremendously reduced the volume of losses from weather conditions.

2. *Closely related to the preceding are uncertainties in the productive process.*—In spite of the immense advance in applied science in the past 150 years, there still remain numerous points where commitment of capital is based on uncertainties. *Strength of materials* is one such

[1] Of course in the illustration given the coincidental breaking of all the small windows is a theoretical possibility, and, if it occurred, would be quite as serious as the breaking of the one large one. The point is that such coincidences are so extremely rare that their possibility may be disregarded entirely. The justification for this treatment of infinitesimal risks is developed more fully in chap. ii, note 1.

weak point in our applied science, particularly in the case of materials which have suffered depreciation in use. The *effectiveness of labor* is another point at which advance estimate and final result are apt to vary, and *variations of weather* make agricultural production notoriously speculative.

3. *Social hazards include the risks due to deviations of individual conduct from what is expected*, such as robbery, defalcation, and forgery, and also risks due to the impossibility of predicting the behavior of social groups. Strikes, riots, wars, tariff changes, tax reforms, prohibitory laws illustrate the range of these risks.

4. *Risks due to individual ignorance cause many losses and make possible many profits.*—In a sense all risks are due to ignorance, for if all the conditions of any situation were known there would be no risk involved in it for anyone. There is, however, a distinction worth maintaining between risks due to the limitations of human knowledge and risks which are due to the failure or inability of individuals to take advantage of the knowledge which is accessible to themselves or to those with whom they come into competition. It is risk of this character which keeps down the competition to seize favorable business openings and makes it possible for persons of superior knowledge and skill to profit by their superiority. Potential competitors are kept out of the field by their ignorance of its existence or its extent, and many who do enter are unable to compete effectively.

5. *Market risks form the most important group of all.*—By market risks we mean the unavoidable uncertainties due to the fact that *time* elapses between the purchase and the sale of commodities, during which time unpredictable changes often occur in the prices and other market conditions surrounding the commodities dealt in. Rarely is it possible to conclude both the buying and the selling part of a given transaction simultaneously, so as to relieve the business man of risk, and even when it can be done there is risk that he will be held to one contract and be unable to enforce the other.

The extent to which the time element makes business risky has been indicated by President Hadley:

> Down to the present century, a large part of the speculative profits were made by taking advantage of differences of price in different places—chiefly in connection with foreign trade. The means of communication and transport were so defective that there was often a great scarcity of an article in one region and an abundance of the same article in another. The shipowners who moved the article from the latter place to the former had a chance of

enormous profits. But the business was also attended by great risk. Transportation was far less safe, either from the elements or from human violence, than it is today. There was no telegraph, no good postal service, no efficient protection from pirates by sea or highway robbers by land. All these causes combined to render the arrival of goods so uncertain that the very wages of the seamen were made contingent upon the safe delivery of the cargo, and the whole body of sailors thus became participants in the speculation.

The nineteenth century has witnessed a change in these respects. Improved means of communication have greatly lessened the differences in price in different markets. It is no longer possible to have a glut of wheat in Chicago and a scarcity in Liverpool. The modern post-office and the telegraph furnish prompt information of what is going on all over the world and enable merchants to know where goods are most needed. The steamship and the railroad furnish a quick and safe means of placing the goods where they will meet such needs as may arise. The difference of price of any staple article in two large wholesale markets will not generally be much greater than the cost of transportation from one to the other. So moderate have the profits from this source become that the business of those who try to secure them is now known as *arbitrage* rather than speculation. Only in the trade with barbarous or half-civilized races does foreign commerce retain its character as an extra-hazardous business.

The speculator of today makes his money chiefly by taking advantage of differences of price between different *times* rather than between different markets. It is not so much the difference in the price of wheat in Chicago and in Liverpool which furnishes the source of his profits, as the difference between its price in Chicago this month and next month. When such speculation anticipates an actual demand, it is of great service to the community. The long time which elapses between production and consumption, between contracts and their fulfilment, makes it extremely important to have responsible men to anticipate the wants of the market and take the risks on their own shoulders.[1]

It will be noted that from the standpoint of risk it makes no difference whether the buying or the selling occurs first. In many cases the business man contracts to deliver a certain commodity at a given price, then purchases the things he needs to fulfil his contract. The sale of a newspaper subscription, a building contract, the collection of university tuition, are all transactions of this character. More frequent are the transactions where something is bought first with the idea of selling it, or some product into which it enters, at a profit.

[1] Adapted by permission from A. T. Hadley, *Economics*, pp. 104–5. (G. P. Putnam's Sons, 1899.)

Sometimes both elements are present in the same transaction, as when a tailor first buys cloth, then after taking an order for a suit, buys the labor to make it up. In all transactions of either of these types, and it must be repeated that practically all business is of one type or the other, the longer the *time* involved in the fulfilment of obligations entered into, or in the disposal of commodities bought, the greater the risk of adverse changes, either in price or in other market conditions. Declines in price of one's product occurring after capital has been sunk in plant and inventory have probably ruined more businesses than any other single group of causes. Increases in cost of materials and labor after contracting to sell one's product are sometimes equally disruptive. Such changes in prices may be due to decline of demand arising from a change of consumers' tastes—the collapse of the American Bicycle Company is a good illustration; or to appearance of a more efficient method of production, as in the supplanting of hand weaving by factory processes; or to the appearance of a rival commodity which renders a superior service, as when the tungsten filament supplanted the carbon for electric lighting purposes; or to changes in the general level of prices, as is illustrated by the decline of gold-mining during recent years of advancing prices.

Of course the conditions which give rise to the chance of adverse changes also bring the chance of favorable changes. When the probability of such unpredictable changes, one way or the other, is considerable, and business is entered into with a view to profiting by a preponderance of favorable changes, the business is said to be of a speculative character. If the capital invested is highly specialized, the speculative element is increased because of the impossibility of recovering the investment if things go wrong with it. Real estate, grain, cotton, fresh fruit and vegetables, sugar, live cattle and hogs, horses are dealt in largely as speculative commodities, though in marketing many of these commodities it is feasible to reduce the speculative element in business by "hedging." (See chap. xii.)

In most lines of business profit does not depend upon favorable changes in the market, and the owner-manager would gladly give up his chance of profit from fluctuations of the market for the sake of freedom from its risks. The fluctuations, like the physical hazards referred to above, are a disturbing element, and though they may give rise to as many gains as losses, the necessity of taking precautions against them involves a cost which is a dead loss to the group as a whole. In strictly speculative lines, on the other hand, the fluctua-

tions are the chief source of profit, though here also they may give rise to as many losses as gains.

In relatively few cases does a highly speculative business derive its character from uncertainties in the *productive* process. Mining and oil-drilling furnish the best examples of this sort of risk. The development of inventions is highly speculative, partly because of market considerations and partly from uncertainties connected with production.

The following comparison of the uncertainties involved in production and in marketing brings out other reasons for the emphasis which has been laid on the market as a source of risk:

In the field of production, of course, the body of knowledge is on the whole better organized and more precise. The various systems of management relate more to production than to marketing.

Though a vast field for research, marketing has had comparatively little scientific study. It has not seemed particularly susceptible to scientific study. It abounds in the human equation. This does not mean that much ability has not been expended on this field not only in studying and inciting demand but also in recording performance. Map and tack systems, quotas and bonuses, selling costs and carefully prepared statistics of various kinds have for a considerable period been employed by the most progressive selling organizations. These internal statistics have also been accompanied by external statistics affecting and reflecting market conditions. But in the last analysis, the figures finally used in marketing, however obtained, are based on the law of averages, frequency, or proportion; the standards set, no matter how carefully and specifically adjusted, are in the last analysis averages, modes, or proportions and apply *en masse* rather than in detail. This does not mean that these data are not regarded as exceedingly valuable. Nevertheless a great problem in marketing is to get down beneath the law of averages and types.

Production is so much more specialized and standardized, so much more precise than marketing, that it is possible, given certain facts of material, dimension, and design, to set a maximum time for the performance of a certain specific operation. The appliers of scientific management have, furthermore, shown the possibility of determining a minimum time for this operation with conditions continuing the same and of prescribing the means whereby this minimum time need not be exceeded. In other words, the scientific manager in production cannot only tell William Jones how long he should be in machining a certain part, but can furnish him with the best feeds and speeds to employ in doing the work in the time specified, and if the methods and time apply in Philadelphia it is presumed that they will also apply in Boston. But in marketing, no manager, no matter how able

and experienced, would attempt to tell Thomas Smith how long he should be in selling a pair of shoes to William Jones, nor to give more than general instructions as to the best way in which to do the selling. About the best this manager has been able to do is to say that in a week, on the average and according to the season, Thomas Smith should sell so many dollars' worth of shoes. In machining the part, the conditions are more standardized, the operation more specialized, the human factor is smaller and is more under control. In selling the shoes, the opposite is true. In production, the time for an operation can be measured by minutes and less; in marketing, I have encountered no practical use being made of units of less than one week.

This warrants the consideration for a moment of certain fundamental differences between production and marketing. These differences may be balanced against each other as follows. In production, men meet only as members of the business—as subordinates, peers, or superiors. Neither the customer nor the competitor is encountered directly. In marketing, on the other hand, men are in contact not only with the other members of the business, but also with the customer to serve and the competitor to meet. In production, the problems are likely to be more those of cost—material, labor, and overhead. In marketing, the attention is more focused on price. Knowledge of cost is not particularly essential. The market is fixing values outside of the business' control. Emphasis is also likely to be laid on quality and service. In production, the problems on the whole are internal. In marketing, the problems on the whole are external. Competition is on every hand. The market is to be analyzed. In production, there is probably for the individual business a possibility of greater independence of action. Marketing is probably more hedged about by the customs of the trade. In other words, as said before, marketing abounds in the human equation.[1]

The last sentence in the preceding selection touches one of the fundamental and irremovable elements of uncertainty in the business man's problem. "Business touches the human equation." That is, the decision of a business problem depends on a judgment as to what certain individuals will do under given, or partially given, circumstances. This is always fraught with uncertainty, if for no other reason because if A's decision depends on what B will do, and B's decision on what A will do, it is obviously impossible for both to get all the data they need. The only way in which one can arrive, even in theory, at a scientific solution is through a rigid exclusion of free

[1] Adapted by permission from S. O. Martin, "Scientific Study of Marketing," in *Annals of the American Academy of Political and Social Science*, LIX (1915), 78–80.

choice from his interpretation of human conduct; but on such an interpretation the business manager himself would have no interest in the result of his analysis anyway, as his own action would be determined outside his own choice.

Moreover, quite apart from the theoretical impossibility of arriving at a scientific judgment in matters of human conduct, the business manager runs quickly into serious practical difficulties. Time and cost set limits to the extent of his researches. No more than a general in the field can he wait till all the relevant facts have been gathered, nor can he afford to spend in their collection an amount greater than they will add to his profits. Even these limits he cannot definitely know. How much time, how much money it is worth while to spend in trying to complete the data on which to base a given decision, depends on facts which frequently cannot be known till the investigation is complete and the decision has been made.

In other words, the choice between two business policies or lines of action is in most cases not comparable to the solution of an algebraic equation, a type of problem where two trained minds may be expected to arrive invariably at the same conclusion. Sometimes it is rather like the translation of an inscription on a defaced monument where some of the words can be deciphered with ease, some can be made out with the aid of photography, and some can only be conjectured. Sometimes it is like a question of ethnography, where the expense of collecting data concerning an uncivilized race may make it necessary to depend on the unconfirmed accounts of a few travelers. Sometimes it is like the decision of a general in the field, where action must be taken at once, without waiting for the much desired information to arrive.

The conclusion is not, however, that since we cannot know all we would like to know we cannot conduct ourselves rationally. If time or cost prevents our reaching a valid final judgment, there still remain several ways of meeting the situation. To these we will give attention in chapter ii.

QUESTIONS

1. "The grower, the manufacturer, and the merchant *must* speculate." Why?
2. Are risks greater in a changing condition of industry? in a market of greater time area?
3. Commercial speculation may concern itself either with the time area or the space area of the market. Explain.

4. How does the "roundaboutness" of modern industry affect risks?
5. Explain how the presence of highly specialized capital goods in modern industry accentuates risk.
6. Does expanding education have any tendency to increase risk?
7. How has the development of improved transportation and communication affected risk?
8. Do you gather that risks are increasing? Is there any answer to this question? Suppose they are increasing; is society worse off?
9. "Business touches the human equation." Explain.
10. Try to outline what would be involved in a complete elimination of significant risk in our business life.

CHAPTER II

WAYS OF DEALING WITH RISK: ELIMINATION OF THE RISK

It is clear enough that there is no escape, present or future, from the presence of uncertainty in the administration of business, and that we must accordingly deal with risk. The elimination of the risk requires the elimination, not of the loss or damage itself, but of the uncertainty concerning its time or place or extent. Usually this involves the substitution for the uncertain loss of a smaller but certain loss in one form or another. This cost, for instance, may consist of the price of a safety device, which may never be used or needed but if it is needed, may save many times its cost—it may be an insurance premium, or it may be the cost of an investigation to remove the uncertainty.

Methods of dealing with risk may be analyzed into the following types:

A. Elimination of risk by:
   1. Prevention of the harmful events
   2. Forecasting, or research to remove the uncertainty
   3. Combination of risks
   4. Accumulation of reserves to provide for meeting the risks
   5. "Compensation," or offsetting of risks

B. Assumption of Risk
   1. By owner-managers
   2. By investors and speculators
   3. By laborers

C. Transfer of risks to others
   1. Transfer to entrepreneurs, from
      (*a*) Laborers, through the wage system
      (*b*) Capitalists, through the interest system
   2. Contracting out
   3. Hedging
   4. Insurance
   5. Guaranty, suretyship, underwriting, etc.

The present chapter deals with the various methods of *eliminating* risk.

1. *The prevention of harmful events is an ancient and universal method of reducing risk.*—No very detailed discussion of this method of dealing with risk is necessary. Umbrellas, lightning rods, fireproof walls, and burglar alarms furnish everyday illustrations. Science and invention are constantly improving our technique for the removal of risk by prevention of harmful events, sometimes by the development of new methods, oftener by what is quite as important, the reduction of the cost of old methods.

2. *Reduction of risk by research has greatly increased in importance.*—As civilization advances the relative importance of science grows. On the one hand, the mass of accumulated information and experience requires more study and more specialization for its mastery; on the other hand, the complexity of the problems to be handled, the magnitude of the enterprises to be controlled, make such mastery ever more necessary. Just as in the latter part of the Middle Ages the trained lawyer gained control of the administration of justice, and a little later the physician wrested physic from the barber, so in the nineteenth and twentieth centuries the construction engineer supplants or directs the rule-of-thumb contractor, the works engineer who grew up in the plant gives way to the engineer with technical training, the trained nurse ousts the "practical nurse." The increasing importance of science in business is merely one illustration of its increasing importance in all human affairs.

The same factors which have brought about the development of scientific method in other fields have been operative in the field of business management, and here as in other fields the recognition of the value of exact knowledge and intelligent planning, though recent, has been very rapid. Whether the problem in hand is that of choosing a location, promoting an official, canceling a purchase order, refunding a bond, or writing an advertisement, the business manager has a choice of the two methods of procedure—snap judgment based on tradition, personal experience, haphazard information, and the circumstances of the moment, or careful judgment based on investigation of all the available data. So far as may be, he should rely upon the latter. One of the principal functions of formal education for business, indeed, is to indicate the value in business of modern methods of scientific analysis in such varied forms as the development of commercial research for the management of the market; of psychological

and social investigation as a guide in the administration of personnel problems; of time study, laboratory analysis, and other technical methods of attack on the technical problems of production; of cost accounting as a guide in directing business policies.

The following selections describe certain aspects of the trend of business in recent years toward more exact scientific methods:

MARKET ANALYSIS[1]

In order to determine to what particular class of customers his sales campaign should be directed, a manufacturer finds it necessary to study his market carefully under present conditions of keen competition. Blunderbuss methods are wasteful; hence they are becoming antiquated. The demand for any article varies according to purchasing-power, living conditions, occupations, racial characteristics, climatic conditions, and numerous other influences affecting the different classes of consumers. The object of market analysis is to determine which class or classes of consumers constitute the potential market for the product, to ascertain where that class is located, and to find out what channels of distribution are most readily available for reaching them.

There are few, if any, commodities for which equal per capita sales may be expected in all sections of the market, provided the market is more than local in its scope. In each district there are numerous classes of consumers with widely different tastes and desires, and the relative proportions of these classes in different districts always vary. In New York City, for example, the population of the metropolitan district in 1910 was 6,475,000. In the same year the population of the Cleveland metropolitan district was 613,000. From these figures it cannot be assumed that the New York market for any particular article is potentially ten times as great as that of Cleveland. New York represents the extremes of wealth and poverty. Fifth Avenue and the Lower East Side are at opposite ends of the economic scale. Their wants and their purchasing power are wholly unlike and each differs from the large middle-class strata. In Cleveland the relative proportions of these several classes, with their numerous gradations of purchasing power and of wants, are not the same as in New York. The population of Cleveland, furthermore, differs in its composite parts from that of Cincinnati or other cities, and these differences in the make-up of the population affect potential demand. Another line of demarcation is between urban and rural districts. Because of these diversities a reliable estimate of potential demand can seldom be made upon a gross per capita basis.

In analyzing the market for some products, conditions other than those of a strictly personal nature must be taken into account. A manufacturer

[1] Adapted by permission from M. T. Copeland, *Business Statistics*, pp. 178–83. (Harvard University Press.)

of electric flat-irons, for example, in analyzing his market found that in one city of 300,000 population 25,000 families were supplied with central station electric current. Thus there were 25,000 possible customers in that city. In another city of approximately the same size only 3,000 families were supplied with electric current; hence the potential market in this second city was much smaller.

For some products the market is clearly defined; in such cases the market is easily analyzed by the manufacturer. The manufacturer of machine tools, for example, knows that his product can be sold only to machine shops and engineering works and his task is to learn all the establishments existing and planned for in the territory that he wishes to cover with his sales organization. A similar situation confronts other producers of equipment and materials that are sold to manufacturers. Certain manufacturers of specialties sold to other classes of customers can encompass their market in a list that does not assume excessive proportions; a manufacturer of surgical appliances, for example, can readily obtain and utilize a practically complete list of possible customers. For the great mass of goods sold at retail, however, and for general supplies sold to manufacturers, the market is of a different type and potential demand is much less easily estimated.

In undertaking an analysis of the market for an article which is sold over a wide territory and for which a market index can be selected only with difficulty, too much attention may be given to wealth statistics, which are assumed to indicate incomes received by consumers. Wealth statistics, as a rule, have little significance in market analysis. In the first place, there are no reliable wealth statistics, and, in the second place, even if such statistics were available, they would give slight clue to the probable demand for any particular article. Wealth statistics are published, to be sure, by the United States government, but they are rough approximations.

Wealth statistics are commonly reduced to a per capita basis, but a per capita wealth figure is of little worth for any purpose, for it does not show the distribution of the wealth. It makes a vast difference to manufacturers looking for prospective markets whether the wealth in any district is fairly evenly distributed among the consumers or concentrated largely in the hands of a few very rich persons; the quantity of any commodity purchased by an individual consumer seldom varies in direct proportion to his wealth or income.

Finally, even if the wealth figures were available in such form that they could be relied upon and the distribution of the wealth among the population ascertained, the figures would not accurately indicate market potentialities. Not only are wealth statistics inadequate indices of incomes, but different classes of people engaged in different occupations and living under different conditions do not expend their incomes in the same way, even if those incomes are approximately equal.

Average wages are another set of statistics occasionally referred to as furnishing an index of potential demand. The United States Bureau of the Census publishes average wage statistics, and similar figures may be obtained from other sources. An average wage, however, for all the persons engaged in manufacturing in Massachusetts, for example, includes the wages of numerous highly skilled workmen and also the wages of unskilled men, women, and children. The average is not representative and does not indicate that Massachusetts is necessarily a poorer potential market for any manufacturer than some other states where the average wages may be higher.

Per capita consumption figures for large groups of commodities, such as clothing or foodstuffs, are finding their way into some advertising publications, as affording a guide to potential markets. The only per capita consumption figures which are worthy of consideration are those for such articles as coffee or sugar, where fairly accurate records of importation and domestic production are maintained. The census figures for the value of the product of the various manufacturing industries are too inaccurate, in the form in which they are presented, to be acceptable as a basis for estimates of per capita consumption, and there is too great uncertainty as to the amounts added to the manufacturers' selling prices in the course of the marketing processes to warrant placing any reliance upon estimates of total retail selling value or total amounts paid by consumers for these products. These per capita consumption figures, moreover, are gross figures including many grades and qualities, some of which are virtually non-competing. Such statistics are of little aid in making a careful market analysis.

Instead of attempting to use statistics for wealth, income, or per capita consumption, the first task in undertaking a statistical analysis of a market is properly to determine just what class or classes of consumers constitute the potential market and, if there are varying degrees of demand, what demand may be expected from each class. For this, personal investigation or inquiry may be necessary. The next step is to ascertain the number of consumers of each class in each sales district. From these two sets of statistics the total potential demand for each district under normal conditions can be estimated.

These figures for estimated potential demand, when compared with past sales records, show in which districts the best opportunities exist for sales development and serve as a basis for establishing quotas for salesmen. Ordinarily the comparison of sales records with estimated potential demand shows that the degree of saturation is not uniform in all markets. It is usually found upon investigation that a higher percentage of potential demand has been realized in some markets than in others, thus indicating the direction in which expansion may most readily take place.

Another factor to which attention may be given in analyzing a market for some products is the percentage of distribution—that is, the percentage of the total number of possible retail outlets in which the goods in question are sold. A manufacturer of a food product sold in retail grocery stores generally wishes to induce as large a number of grocers as possible in each district to carry his product. If 75 per cent of the retail grocery stores are selling the article, he considers that he has 75 per cent distribution, without reference, of course, to the relative volume of trade of the retailers.

In establishing sales quotas, allowances must be made not only for differences in degree of saturation and percentages of distribution but also for differences in general business conditions. From season to season general business conditions fluctuate in each district. A poor cotton crop may cut down the normal demand in the cotton states while a good grain crop in the same year may cause business to be exceptionally brisk in the wheat district. Hence the statistical indices of business conditions in each district must be taken into account in comparing salesmen's records with established quotas.

TIME AND MOTION STUDY[1]

According to statements made by scientific managers, the process of analysis, or time and motion study, in the larger sense, should where possible begin with the determination of a site for manufacture. The really scientific manager, starting out *de novo*, will consider all available sites with reference to the time and motion expenditure, determined by actual experiment, necessary in securing an adequate supply of proper materials, in the going to and from the shop of the numbers of the different classes of workmen needed or likely to be needed, in the shipment and marketing of the product, etc. Having in mind the character of the productive process and the most efficient productive arrangements possible, he will then, with regard to the greatest possible saving of waste time and motion, work out with the utmost care and with reference to future expansion the plans for the construction of his plant. This will involve a most careful study of all the general internal arrangements and processes, the most efficient methods of planning the work to be done and of routing it through the shop so that there may be no delay in transmitting orders, no waste carriage of materials and partly finished products, no lost time in the assembly room waiting for delayed parts. With the same ends in view, and in the same manner, he will also determine the most effective placement of machinery, the storage of tools and materials, and the location of the various elements of the office force.

The shop constructed and the machinery installed, he will apply time and motion study in an endless series of experimental tests to determine

[1] Adapted by permission from R. F. Hoxie, "Scientific Management and Labor Welfare," *Journal of Political Economy*, XXIV (1916), 833–43.

what possible improvements can be made in machinery and its operation, and in the tools, fixtures, materials, and specific processes of work. The best feed and speed for each machine, with reference to the different grades of materials, will then be established. The different jobs or processes will be analyzed and re-analyzed, and their elements experimentally combined and recombined, the tools and fixtures changed and rearranged, and all these variations timed and retimed in an effort to discover the most efficient productive combinations and methods.

This time and motion study analysis will extend, it is thus claimed, to every feature and all organic relationships of the mechanical process of production. But it will not stop there. It will be extended to cover the managerial functions and the office work. The duties of the managers, superintendents, and especially of the shop foremen will be analytically studied and reorganized. The methods of storage and delivery of tools and materials, the dispatching of orders from the office to the shop, the purchasing of materials, the marketing of products, and all the methods of accounting will likewise be subjected to time and motion study, in this larger sense, with a view to discovering the most efficient means and methods. . . . . It will endeavor to discover by repeated analysis and experimental timing the best character, combination, and arrangement of tools, materials, machinery, and workmen, the most efficient and convenient lighting, heating, and seating arrangements for the workmen, the proper period for continuous operation by them, considering the element of fatigue, the rest periods needed, their most efficient character, combination, and sequence of motions, etc. Moreover, these particular job experiments will not be confined to one man, or to a few of those who are to accomplish the task. Many men will be timed with the idea of discovering, not the fastest speed of the fastest man, but the normal speed which the group can *continuously* maintain. If necessary, hundreds and perhaps thousands of time and motion studies will be made to determine this before the task is set and the rate established. And whenever a new or better method or combination has been discovered by the time and motion analysis, which is supposed to continue even after the task is set, the whole process of careful and extended timing for task-setting will be repeated, and new tasks and rates established reasonably conformable to the new conditions.

Finally, as an integral part of this broader time and motion study, all the results secured by it will be continuously and systematically filed as a permanent asset and guide to future action. Thus conceived, time and motion study appears to be considered a method of analysis applicable to practically every feature of the productive and distributive process, considered apart from its purely financial aspects, a process of analysis applied continuously throughout the life of the establishment. And the scientific management based upon it is conceived to be a perpetual attempt to discover and put into operation the new and continuously developing technical,

organic, and human arrangements, methods, and relationships constantly revealed by it to be more efficient and more equitable. That this broader conception of time and motion study as the essential basis of scientific managements exists not as a mere dream, but as a practical ideal striven for with the confident hope of realization, the writer can attest from his experiences in the best class of scientific-management shops.

Although the drift in the direction of scientific method is clear, the extent to which the standards of exact science can be maintained varies greatly with the character of the facts to be handled. In the physical sciences no solution is accepted which does not square with all the known facts, and if not all the relevant facts are known, judgment must be suspended till they can be secured by observation or by experiment. In this realm, no truly scientific judgment rests on estimates. This is less true of the biological sciences, and still less of the social sciences. In psychology, philology, ethics, sociology, education, economics, the phenomena are so complex, the objects of study are so heterogeneous, and the mass of relevant data is so enormous that resort must often be had to samples instead of complete data, estimates frequently take the place of measurements, and evidence which falls far short of meeting the standards of the exact sciences is necessarily accepted as a basis for generalization. Consequently conclusions must be less final. This is true partly because of considerations of *time* and partly because of considerations of *cost*.[1] The student of astronomy can afford to wait for years for the reappearance of a comet or of a total eclipse to confirm or disprove his hypothesis, the physicist can spend enough money on a single experiment to make sure the conclusions are right, knowing that if the measurements are exact the experiment need not be repeated, but the educator, the military scientist, or the anthropologist cannot as a rule test his theories completely in the laboratory. He cannot even expend the funds necessary to observe the world-wide variations of the phenomenon he is studying. And yet he cannot, if his science is to have any practical application, defer judgment till the evolution of society has confirmed or disproved his views. Hence he must speak in terms of preponderance of evidence, of typical results, of tendencies, and of probable results from given lines of conduct.

[1] It is perhaps worth noting that time and cost are not entirely separable elements. Often they depend on one another, that is, it is possible to shorten the time of an investigation if cost can be disregarded, or to avoid the cost if one can wait long enough for the facts to become clear.

The same contrast appears in the attempt to apply the scientific method to the solution of business problems which we have seen in its application to problems of thought and of knowledge. In dealing with certain types of data, highly exact measurements are possible, and the results repeat themselves with accuracy. Questions of the technique of machine industry are of this type, so long as comparisons of prices (of cost goods and output) are excluded, and even these over short periods of time are susceptible of very reliable estimation. It is in this field, therefore, that scientific management has made the most rapid strides. The value of accuracy and of scientific planning is no longer a question; the engineer has won his place. On the other hand, as was noted in chapter i, in agricultural production the incalculable element of weather makes it impossible to predict results with the same accuracy, and in marketing, finance, and labor administration uncertainties abound, some due merely to the undeveloped state of the science of business research, others impossible to avoid.

There are very definite limits to the extent to which individual businesses find it to their advantages to eliminate risk either through research or through protective devices. The determining consideration is one of cost, and there are many fields in which it remains true that it is cheaper to run risks than to avoid them. Cost of elimination of risk, moreover, is often in the nature of a fixed charge. One night watchman, for example, can keep guard over numerous buildings almost as well as over one. One lighthouse warns thousands of vessels. Once the research necessary to establish a new truth has been completed it costs little to impart the results to many businesses and perpetuate it for future generations. But the original costs of obtaining the information may involve a large investment with a high degree of risk that nothing useful will be learned. The larger the volume of business, the more likely is this fixed charge to be a good investment; hence a strong tendency shows itself, other things being equal, for risky enterprises to be carried by large-scale methods.

The same advantage may be gained by either of two other methods — co-operation and specialization.

In the co-operative method the cost of research or protection is divided directly among a large number of business units. This method of reducing risk is well illustrated by many of the activities of government. Weather-forecasting has reduced immensely the risks of loss and damage to property on account of frost and flood. No single business could afford to maintain a weather-forecasting service of the

scope of that provided by the government, yet when the cost of this service is spread over all the lines of business which profit by it, it makes only a trifling addition to the burden of taxation. Research undertaken by the Department of Agriculture, the Department of Commerce, consular bureaus, and the Geological Survey has resulted in large additions to our store of exact knowledge in fields where a few years ago production was prevented or made hazardous by a lack of sufficient facts on which to base a valid judgment. In like manner government may be shown to be our most important co-operative device for eliminating risk through *prevention* of harmful events. The maintenance of fire departments and of lighthouses and many other phases of government activity are merely co-operative methods of eliminating the risks of production through activities which would be far too costly for single businesses, but which are very economica when their cost is divided among all who benefit from them.

Other co-operative devices besides government may be used in the same way. Chambers of commerce maintain bureaus of exchange of credit information to lessen the risk of bad debts. In small communities they often contribute to the support of night watchmen to supplement the protection afforded by the city police. Trade associations reduce risk by the maintenance of research organizations. This is but a beginning of a very long list.

A second characteristic modern method of spreading the cost of research over a large number of business units is the development of specialists who furnish the service for pay. This method is illustrated by such diverse enterprises as clipping bureaus, advertising agencies, investors' service bureaus. A very recent development of this sort is the specialized labor service bureau whose chief business is the collection of data for trade-union use in labor disputes.

3. *Elimination of risks by combination increases in importance with the development of large-scale enterprise.*—By combination of risks is meant a grouping of similar items in such a way that we can tell more about the group than we can about the items which compose it. Elimination of risk by combination is the application of the so-called *law of large numbers.* It is often the case that we have a high degree of certainty about a group of data while at the same time we are in complete ignorance about the particular items which make up the group. Thus we may be quite sure that we can predict within 30 per cent the amount of rainfall which will occur in a given region in the next year, while if we try to predict the precipitation for any

particular week, it is more likely than not that the actual result will be either less than 10 per cent or more than 1,000 per cent of our estimate. So with death rates, marriages, enrolments in colleges, desertions from the army, accidents due to fireworks, and thousands of other contingencies. A single event defies prediction, but the mass remains always practically the same or varies in ways which we can predict. It is obvious that any device by which we can base our business decisions on the average which we can predict, instead of on the single event, which is uncertain, means the elimination of risk. The larger the number of cases observed the less is the deviation of results from those which a priori were most probable. (Cf. note 1, p. 27.)

In the following selection Professor Ross elaborates a number of applications of the principle of combination of risks:

The uncertainty as regards the yield of product sets up a current of amalgamation that favors large-scale industry. In almost any line of production minor fluctuations are constantly occurring in the different parts of a business. As, however, these succumb to an average within the single enterprise, they inspire no uncertainty and are not disturbing factors. The larger the enterprise the more do the variations incident to its branch of production reduce to an average and disappear, the fewer are the uncomprehended species of variation. For instance, to the owner of a cow the loss at calving time is uncertain, while to the owner of a great herd this loss appears as a regular percentage that can be computed and allowed for. Even to the rancher the loss by stampede is uncertain, but to a great cattle syndicate with many herds, the loss from this source can be roughly estimated in advance. Again, in a small refinery the possibility of over-doing a batch of oil or sugar may be a source of serious uncertainty, while in a large refinery the law of the average prevails.

But with a rapid growth in the size of the business unit, the great fortunes prove too few to handle the big enterprises. Hence the joint-stock corporation is invoked to supply masses of capital without calling on the rich man. Albeit the stimulus to corporate enterprise has been ascribed to the growth of great industry, no small measure of its success has been due to its fitness for uncertain undertakings. By owning stock in a dozen different corporations and sharing in a dozen undertakings, one is exposed to twelve times as many variations, but each disturbs only one-twelfth as much as when one is proprietor of a single enterprise. Some of the numerous variations will cancel each other, and the rest will locate their effects at the margin of one's fortune, where the subjective value of equal losses and gains is nearly the same.

The corporate form, therefore, is at its best a mutual insurance scheme, whereby the losses and gains due to variations are first pooled, and then

shared equitably among a large number. By thus enlarging the bearing and absorbing surface, by creating solidarity through the interlacing of many private interests, the difference between the variable and the uniform type of production is minimized. While there is a corporate drift all over the field of business, we find it most pronounced in speculative branches, such as mining, boring for oil or gas, electric enterprise, building and improvement undertakings, the theatre business, and the introduction of new devices, machines, utensils, toys, foods, fibers, fuels, etc.[1]

4. *Risks may be lessened by the maintenance of reserves*, i.e., the withholding of resources from use to have them in readiness for a contingency which may or may not appear. Even in seasons of most active business, the existence of risk prevents the employment of our resources to 100 per cent capacity. Some items may be utilized to capacity or beyond proper capacity, but in many departments there are always some reserves of capital not actively employed. Thus the manager of a bank, in addition to the funds he expects to need from day to day, carries in his vaults a sum of idle money which he probably will not need, but which at some time he may need very badly. The grocer carries a little bigger stock than he will probably need before he can secure another shipment. Financial managers refuse to pay out in dividends the entire earnings of their firms, or even the full amount which can apparently be spared. Manufacturers carry extra stocks of raw materials and of repair parts. Such reserves are not entirely due to the risk. They may be accounted for by economies in manufacture or transportation of large units, but in large part they are necessitated by the presence of risk.

The loss of production due to the idleness of the capital reserve cannot properly be called a waste. Its maintenance is a *cost*—the cost of uncertainty. Whether it is a social *waste* depends on the question whether the uncertainty can be removed at a cost less than the loss of production from the maintenance of the reserve. In large part, the uncertainty is of course quite beyond our powers to remove, and the maintenance of the reserve may be the most economical way to deal with it. So long as this is true, the cost of maintaining reserves is no more a "waste" than is the wear and tear on machinery or the cost of raw materials used up.

Professor Pigou has pointed out the way in which the development of a more coherent social organization has made possible a more

[1] Adapted by permission from E. A. Ross, "Uncertainty as a Factor in Production," in *Annals of the American Academy of Political and Social Science*, VIII (1896), 115–19.

effective *combination* of risks and thereby rendered the maintenance of reserves less necessary:

The development in the means of communication facilitates the combination of uncertainties in one very simple way. It puts investors into contact with a greater number of different openings than were formerly available. This effect, though of great importance, is so obvious and direct that no comment upon it is required. There is, however, a more subtle way in which the development in the means of communication works. Dr. Cassel has observed that industrial firms have, in recent times, been lessening the quantity of stock that they carry in store, waiting to be worked up relatively to their total business. The improvement in this respect applies all round. As regards production, "there is, in the best-organized industries, very little in the way of material lying idle between two different acts of production, even if these acts have to be carried out in different factories, perhaps at great distances from each other. A modern iron-works has no large stock either of raw materials or of their product, yet there is a continuous stream of ore and coal entering, and of iron being turned out of it." In like manner, factories are coming to keep a smaller amount of capital locked up in the form of reserve machines not ordinarily in use. The same tendency is apparent in retail trading. The ratio of the average amount of stock kept to the aggregate annual turn-over is smaller than it used to be.

Now, *prima facie*, this change of custom would seem to be of little significance. After all, a reduction in the amount of finished goods held by retailers, of reserve machinery held by manufacturers, and so on, does not necessarily imply a reduction in the aggregate amount of these things held by the whole body of industrials. On the contrary, we are naturally inclined to suggest that the wholesaler and the machine-maker must increase their stocks *pari passu* with the decrease in the stocks of their clients. As a matter of fact, however, this suggestion is incorrect. The reason is that the wholesaler and the machine-maker represent points at which uncertainties can be combined. The development of the means of communication, therefore, in so far as it directly transfers to them the task of bearing uncertainty, indirectly lessens the amount of uncertainty that needs to be borne. Uncertainty-bearing, in short, is rendered more efficient.[1]

Another writer has shown that combination of risks operates in exactly the same way to reduce the necessary social reserves of unemployed labor:

The irreducible minimum of unemployment does not appear only in the general percentage for all trades taken together, it is shown also by each trade or group of trades taken separately. . . . .

[1] A. C. Pigou, *Wealth and Welfare*, pp. 100, 101. (The Macmillan Co.)

It holds true not of decaying industries but of those on which the development of the nation's prosperity has been based. For each group, indeed, taken as a whole, there appears to be much the same irreducible minimum below which the year's unemployment percentage never falls. Depression of trade is marked by very varying maxima. In the best years all the groups alike tend to have about two per cent. unemployed. An excess of the supply of labour over the demand appears to be a normal condition in the skilled and organized trades.

Suppose that ten centres of casual employment—say ten similar wharves—each employ from 50 to 100 men on any one day, so that each considered separately requires a regular staff of 50 and a "reserve" of 50 more. In so far as the variations of work depend upon general causes, affecting all the wharves simultaneously and similarly, the busy and slack times respectively will tend to coincide and the variations in the total work to reproduce proportionately those of each separate wharf. In so far, however, as the variations at different wharves are unconnected, they will, in the total of men required at all the ten from day to day, tend to neutralise one another, because a busy time at some wharves will coincide with a slack time at others. Suppose that in fact the numbers employed at the whole ten from day to day range from a minimum of 700 to a maximum of 800. These daily numbers, whatever they are, will give the numbers of "regular" and "reserve" labourers who may theoretically find work at the whole ten wharves taken together. They must be taken as unalterable, determined solely by the necessary irregularities of trade and tide. They would presumably be the actual numbers employed supposing all the ten were amalgamated into a single wharf having the same mass and flow of custom. But so long as the wharves remain distinct, the number of individuals who will practically be required to do the same work is affected also by quite a different set of considerations. It is clear that if each separate wharf forms an absolutely distinct labour market so that no man works at more than one, then, however the variations of business neutralise one another, the number of individuals required to do the work will be 100 for each wharf or 1,000 in all. It is clear, on the other hand, that if the whole ten form a single labour market within which labour is absolutely fluid, then the full number of individuals required will coincide with the maximum of 800 employed on any one day. The total number of men practically required to do the work without delay (and by consequence the number of reserve labourers) is, in fact, increased by every barrier to free movement from one wharf to another, and can be correspondingly decreased by everything tending to the organisation of the whole ten into a single labour market.

The greatest barrier to free movement in any area is ignorance among the men as to the demand for labour in different directions; every means taken to remove this ignorance enables the work of any area to be done with

a smaller reserve of labour. But the general distribution of the most accurate information as to the amount of work at each centre is only a first step. Even if every man knows exactly how many men will be wanted next day at each wharf, this will not of itself (i.e., unless each knows also exactly how his fellows will act) prevent too many individuals from applying at one wharf and (perhaps) too few at another. If it is desired to do the work with the smallest possible reserve of labour, some means must be adopted for directing the right number of specified individuals to each wharf from some one centre or exchange.

The foregoing arguments may now be summarised. For the work of a group of casual employers a certain theoretically determinable number of men may be regarded as necessary; the number will be fixed by conditions of trade which must be taken for the present as unalterable. And, in so far as these trade conditions involve rapid and irregular variations of work within fairly definable limits, a part of this total number will have the character of an inevitable reserve of partially employed labour. But the actual number of men by whom the work is done, and its relation to the theoretically necessary number, will be affected also by another set of considerations, quite unconnected with the total volume of work or the unalterable conditions of trade. In the first place, every hindrance to the perfect fluidity of labour from centre to centre will swell the actual number of individuals doing the work by an amount representing the degree of friction. To return to the numerical instance, the work of ten wharves, which, if they had become for purposes of employment one wharf, might have been done by 800 men, would with a certain degree of friction, require the services of 900. In that case there would, even when the wharves, as a whole, were busiest, be at least 100 men out of work.

Those men who will in practice be added to the theoretical maximum for any area by friction between its separate centres, though the product of disorganisation are true reserve of labour without which, given that degree of disorganisation and friction, the industry could not be carried on.[1]

It will be noted in the foregoing argument that the problem is not solved by distributing accurate information as to the amount of work. What each will do is for the individual to determine. If one is to do this with scientific accuracy, it is necessary for him to know what every other laborer is going to do and, of course, it is equally important for every other laborer to know what the first laborer is going to do. If each man's decisions depend upon other men's conduct it is obviously impossible to eliminate a large amount of uncertainty by any conceivable system of information. The only way to eliminate

[1] Adapted by permission from W. H. Beveridge, *Unemployment*, pp. 68–81. (Longmans, Green & Co., New York, 1910.)

this element of uncertainty is to establish some central agency to apportion the labor in accordance with some agreed standard of proper distribution.

Exactly the same analysis applies to every other form of competition. So long as we actually have competition, one large element of uncertainty can never be eliminated. No matter how accurate the business man's information as to the prospects in a new field, his decision to enter that field involves a large element of risk, unless he knows how many other people are contemplating the same opportunity and how many of them will finally decide to enter the field. Under present conditions this often is not difficult, for few may know of the opportunity, but the more widespread the dissemination of information, and the more general the disposal to act upon the information relative to new opportunities, the more likely is any such opportunity to be "overexploited." In other words, the only way to eliminate this risk is to provide some central agency through which the tasks of business men may be cleared and by which their efforts may be apportioned in some rational way.

Assume a given population and a given amount of labor to be performed, it is obvious that the only alternatives are first, a more or less random distribution of the employment, or second, complete employment for some and unemployment for others, or third, a rationing of labor so that each shall get part-time employment. This still leaves unanswered one fundamental question: Why does the volume of employment remain smaller than the available supply of labor? Why, if there are unemployed reserves of labor, does it not pay someone to start new enterprises to take up this slack? For apparently, it must be possible to employ the men in such a way that they can be paid more than they can get doing nothing, and still leave some profit to the employer.[1]

The difficulty seems to be this: that entrepreneurs hesitate to make investments in industries unless they have a reasonable assurance of being able to get a sufficient supply of labor to keep the capital busy, and the exact amount to be needed is always a matter of uncertainty. Hence, with *any given supply* of labor, the extension of industry will be likely to stop at a point where something less than

[1] It should be noted that the question involved here is not the question of earning even a living wage, for if there are more laborers than can be employed at a living wage, it would still be profitable to employ them at one-half a living wage, which is better in most men's estimation than nothing.

full-time employment for 100 per cent of the people is afforded. In the case of the dock laborers, a supply of labor only sufficient to keep the docks busy in a season of minimum demand would mean that the docks would be undermanned at busier seasons. Docks simply will not be built up to that point, or if, through error, they are so built, they may be operated, but will be allowed to depreciate. Apply this line of reasoning to industry at large. One of the factors with which the average business man must deal is the possibility of securing labor. If the labor in the vicinity is already 95 per cent employed, he is much less likely to start a new enterprise than if it is only 90 per cent employed. If the labor is already 99 per cent employed, no enterprise can start unless the income in sight is sufficient to enable it to draw away its labor from industries already existing. The result of starting such an enterprise may be to reduce the percentage of unemployment temporarily to zero, but such a situation cannot persist. The new enterprise may succeed, but its success would necessitate the failure or curtailment of operations of concerns which were in a weaker position and could not count on drawing their labor supply away from others. *There must be some reserve for contingencies.* Operations cannot be expanded *permanently* to the point where they require all the available supply of labor and leave no surplus to be drawn upon in case of emergency.[1]

The situation in industries is similar in this respect to that which exists in a military campaign. It is never possible to have all the men on the firing line at once. Quite apart from the necessity of utilizing part of the forces in auxiliary functions and the constant presence of a hospital reserve, a considerable proportion of the troops available for active service must always be held back to provide for unexpected contingencies. Only an overwhelming catastrophe or its imminent prospect will call into action the total available forces.

Closely related to the method of combination to reduce risk is the method of compensation, by which we mean the adjustment of business affairs in such a way that losses of a given kind will be directly associated with profits of another kind. This differs from combination in that it does not rely upon the operation of chance to even out fluctuations but seeks to match one fluctuation directly against another. Planting

[1] Thus, during the boom of 1919, new industries were started without any source for their labor supply except labor already employed, but the resulting "tightness" of the labor situation was a major factor in undermining the profits of industry and shortening the boom.

a dry-weather and a wet-weather crop in the same year is an illustration. Hedging contracts (see chap. xii) combine the method of compensation with the transfer of risk to specialists.

NOTE I

THE MATHEMATICS OF PROBABILITY

In connection with the elimination of risk by combination and the estimation of degrees of risk, frequent reference is made to the calculation of probabilities. It seems necessary, therefore, to consider somewhat in detail what is involved in the discussion of probability in mathematical terms.

As is brought out more fully in chapter iii, probabilities are of three classes: those in which a definite mathematical expression of probability can be attained in advance of the occurrence of the uncertain event; those in which such a probability cannot be known definitely in advance, but can be established from the observation of regularity in the past behavior of the phenomenon; and questions of judgment, in which neither a mathematical nor a statistical basis of calculation exists. We are not concerned at this point with the cases of judgment (which are discussed in chapter iii).

Mathematical probabilities are expressed accurately, and statistical probabilities approximately, by the use of common fractions. A probability of $\frac{1}{6}$, for instance, means, loosely speaking, that the event in question is likely to happen once in six "trials." More accurately this means either that there are six equally probable situations, one of which constitutes the event whose probability we are measuring, or else that the number of equally probable cases is $6n$, n of which are classified together, any one of these n constituting the event whose probability we are trying to state. Thus, if in drawing cards from a full pack we estimate that our chance of drawing a ten-spot is $\frac{1}{13}$, what we mean is that there are 52 equally probable events, 4 of which we classify as "drawing a ten-spot," and 48 of which we classify as "failing to draw a ten-spot." All statements of probability in exact mathematical terms reduce themselves to classifications of *equally probable* events, part of which fall within and part without a given category, and comparing the number of those within with those without the category.

Once this idea is understood, the mathematics of probability resolves itself into a consideration of mathematical devices for simplifying the task of enumerating alternatives within or without the categories in which we are interested. Into the intricacies of probability mathematics we need not proceed far; one or two illustrations will suffice to illustrate certain principles which we need to use.

In many cases the probability of a given combination, in a series where each result is one of two equally probable events, is calculated by the use of the familiar binomial theorem:

$$(a+b)^n = a^n + na^{n-1}b + n\,\frac{(n-1)a^{n-2}b^2}{2} + \frac{n(n-1)(n-2)a^{n-3}b^3}{2\cdot 3} + \ldots\ldots + b^n$$

If the exponents are taken to represent the number of times that each item occurs in the combination whose probability is sought, the probability will be represented by the fraction whose numerator is the corresponding coefficient and whose denominator is 2 raised to the nth power. For instance, the chance of throwing heads seven times in succession is found by taking as the numerator of the probability fraction the coefficient of a^7; in this case unity. Taking 2^7 as the denominator, we get $\frac{1}{128}$ as the result. The fourth term of $(a+b)^7$ is $35\, a^4\, b^3$; the chances of an individual in seven trials throwing four heads and three tails is $\frac{35}{128}$.

The reason for the relationship between the binominal theorem and the calculus of probabilities will be obvious on a moment's consideration of the way in which the result given in the theorem is reached through actual multiplication. In multiplying out, there is only one combination of seven a's; there are 35 combinations of four a's and three b's, such as *abababa; aaabbba*, etc. Likewise in tossing the coin there is only one way in which seven heads can be tossed in succession, while there are 35 ways in which seven tosses can yield four heads and three tails. In other words, there are 128 distinct equally probable results, 35 of which are classified together as "four heads and three tails."

The probability of a given combination in a series of events each of which is one of three equally probable events, is similarly calculable by using the coefficients of $(a+b+c)^n$ to obtain the desired numerator, and 3^n as the denominator.

The combined probability of two independent and mutually exclusive events, that is, the probability of their both happening, is the product of the ratios of their separate probabilities. For instance, if the chance of a certain event is $\frac{1}{4}$ and the chance of another is $\frac{1}{2}$, the chance of both happening is $\frac{1}{8}$, provided that the occurrence of the one does not change the probability of the other, and also provided that they cannot both happen as the result of the same outside event. The chance that one or the other will happen is the sum of their respective probabilities, minus the probability of both happening. The chance that neither will happen is the product of the separate probabilities that each will not happen.

For example, if the probability of A's failure within 60 days is estimated as one chance in 100, and the chance of B's failure is rated as one chance in 200, B's indorsement on A's note would reduce the probability that the holder of the notes may suffer a loss on account of bankruptcy to one chance in 20,000, provided neither A nor B was a customer of the other, or involved in business relations with the other so that the failure of one would greatly increase the probability of the failure of the other, and provided that their businesses were so different that they could not both be overthrown by a single independent cause. In practice, of course, the hazard of A's failure is never entirely independent of the hazard of B's failure. Modern business is so interdependent that the events which cause disaster to one business

are likely to cause disaster to many others. Wars, financial panics, changes in taxation, new inventions, all illustrate the extent to which the hazard of businesses in a single community and even throughout the civilized world are interdependent.

The most important practical consequence of the theory of mathematical probability is the support it gives to the empirical "law of large numbers." It has long been observed that many phenomena which display a high degree of irregularity, so far as the individual items are concerned, are highly regular after observation is fixed on the behavior of groups of such items. Thus we may be quite sure that we can predict within 30 per cent the amount of rainfall which will occur in a given region in the next year, while if we try to predict the precipitation for any particular day, it is more likely than not that the actual result will be either less than 10 per cent or more than 1,000 per cent of our estimate. So with death rates, marriages, enrolments in colleges, desertions from the army, accidents due to fireworks, and thousands of other contingencies. A single event defies prediction, but the mass remains always practically the same or varies in ways which we can predict.

An examination of the coefficients secured by use of the binomial theorem shows that so far as mathematical probabilities are concerned, the law of large numbers has a sound scientific basis. For example, compare the coefficients secured by raising $(a+b)$ to the seventh power with those secured by raising $(a+b)$ to the eleventh power. In the first case the sum of the coefficients of the first two and last two terms is 16. The sum of the coefficients of the middle four terms is 112. That shows that the chance of securing as many as six heads or as few as one head out of seven trials is $\frac{16}{128}$ or $\frac{1}{8}$. If we take a similar result for the eleventh power, the sum of the coefficients of the first three and last three terms is 134, while the sum of the coefficients of the middle six terms is 1,914. That is, the chance of getting as few as two or as many as nine heads out of eleven trials is 134 out of 2,048, or about one in 15. As we increase the number of terms the probability of a wide divergence of the actual from the most frequent result declines rapidly; hence more accurate prediction becomes possible. In tossing a coin 32 times there is only one chance in 4,500 of getting 27 heads or 27 tails; in tossing 500 times the probability that the number of heads will be between 200 and 300 is nearly 1,000 to 1.

Calculations of mathematical probability are seldom of much importance in actual business. Actuaries make extensive use of mathematical probability in determining the cost of specific clauses in insurance policies. In this case the original probabilities of death or survival are not mathematical probabilities. They are merely statistical frequencies, but once these ratios are assumed, they may be treated as though they were mathematical probabilities. For example, in computing the premium for a policy which is written to be payable at the death of one or the other of two persons, the

calculation of combined probability of death within a given period is a purely mathematical problem similar to those discussed above, once the mortality table is adopted. The separate probabilities rest on the observation of past mortality, which it is assumed will continue.

This assumption of continued regularity is itself a corollary of the law of large numbers. If we are proposing to send out 50,000 advertising letters to popularize a new device, we are very much interested in knowing in advance what proportion of the persons to whom these letters are sent will be likely to respond. There is no a priori method of calculating the probability of a given individual's answering such a letter. Resort must be had to what, in the terminology of statistics, is called the sampling process. If we send out, say, ten letters and get three replies, we have some slight basis for judging what is the probability of the average prospect's answering. If we send out 100 letters and get 30 replies, we have a surer basis of judgment. If we send out 5,000 letters to prospects taken at random from the list, we consider ourselves justified in assuming that the ratio of replies received to the 5,000 letters is very close to that which will be shown by sending out the entire 50,000. The basis of this assumption is exactly the same as the basis for the assumption that when coins are tossed a large number of times there will by an approximate equality between the number of heads and number of tails shown. We do not know what the final ratio of answers is to be, but we assume that whatever the ratio is for the entire group, the ratio for a group of 5,000 will not diverge widely from it. The high degree of success which has attended the use of this sampling method in such widely divergent fields as market research, heredity, weather forecasting, and the transmission of disease, makes it apparent that there is some force at work establishing regularity of recurrence among many phenomena where inspection of a few cases seems to indicate absolute unintelligibility.

Presumably the situation here is the same as it was in the cases of pure mathematical probability discussed before. That is, there is an inconceivably large number of equally probable cases, part of which fall within the scope of one of our classifications and part within the other, and though we cannot calculate in advance what the ratio is, it is perfectly sound scientific method to infer a law from a regularity running through a large number of cases and use it as a basis of prediction with regard to the rest. This tendency of groups to display variations in their membership in definite ways is the basis of all social science. The economist recognizes that there are individuals who display no acquisitive bent, but he knows also that in any large group such individuals are in a small minority, and he bases his theory of value on the assumption that the controlling majority in any given case will act as controlling majorities have always acted, and that the abnormalities, that is, the infrequent variations, may be neglected. So with the educator, the practical politician, and the penologist; each recog-

nizes that he is dealing with individuals whose behavior is in large measure unpredictable, and makes no pretense of being able to offer generalizations or prescribed rules of discipline which will work well in each individual case, but he does claim to be able to develop, from experience and study, a program which will achieve predictable results in a large and fairly definite percentage of cases.

QUESTIONS

1. Illustrate risk being reduced (1) by increasing our knowledge of the future; (2) by employing safeguards; (3) by insurance; (4) by speculative contracts; (5) by social control.
2. Is it possible by foresight and calculation to reduce or to avoid some of the risks of industry? All of the risks of industry?
3. Does integration reduce risk?
4. Is the collection of statistics by trade journals a co-operative or a specialized method of reducing risk?
5. Why should not the government undertake research in manufacture on the same scale as in agriculture?
6. "A strong tendency shows itself for risky enterprises to be carried on by large scale methods." Why? Cite illustrations. Can you cite illustrations of the opposite character?
7. Should a large insurance company be able to give better rates than a small one?
8. How does incorporation aid in lessening risk? Does the feature of limited liability reduce risk or merely transfer it?
9. Specifically, what inconveniences would business men suffer if the reserve of unemployed labor were eliminated?

CHAPTER III

WAYS OF DEALING WITH RISK: TRANSFER TO OTHERS; ASSUMPTION OF RISK

The methods outlined in the preceding chapter are not adequate to remove nearly all of the uncertainties of production, and consequently it is necessary for someone to bear the risks which are not so removed. It is not necessary, however, that the brunt of this risk-bearing should be borne by the individuals upon whom it falls in the first instance. Here, as elsewhere, in modern business the principle of specialization has been found useful, and much of the complexity of our industrial and commercial system is the result of attempts to relocate the burden of risk. Usually the transfer is combined with some other method of risk reduction. Frequently, for example, specialization in risk-bearing is associated with the reduction of risk through combination, as is the case in most insurance. The fire insurance company, for instance, by insuring a large number of houses in scattered localities, changes the small risk of a 100 per cent loss into the practical certainty of a small loss; hence the transfer of the risk is a social gain. Sometimes a transfer results in risk reduction through more successful forecasting on the part of the specialist. For example, an investment bank is able to assume the risks connected with floating new bond issues better than can many borrowing corporations in part, because of its special expertness in judging market conditions, hence assumes the risk by *underwriting* the issues, i.e., guaranteeing their success.[1] Sometimes transfer is associated with prevention, as when a company insuring steam boilers provides an inspection service designed to prevent explosions, or a life insurance company contributes to the support of a public nurse. Occasionally the transfer results merely in a transfer of the risk to someone better able, or more willing, to bear it, as is the case in most speculative contracts.

For purposes of discussion it is convenient to divide the subject of risk reduction through transfer into three principal topics: The specialization of *business men* as a class in carrying the risks of ordinary

[1] There is also some *combination* of risk involved in this transfer, and sometimes some *prevention*, if the underwriter undertakes the active management of the selling.

business, which forms the subject-matter of the remainder of this chapter; the specialization of *investors* in carrying various kinds and degrees of risk, discussed in chapters vii to xi, and the organization of *special agencies* for shifting special types of risk, which are dealt with in chapters iv and xii to xvii.

The typical organization of modern business involves specialization in risk-bearing. The ordinary relationship between employer and employee, between borrower and lender, may not appear, at first glance, to illustrate the transfer of risk, but a moment's reflection will show that that is exactly what its purpose is. When a business is organized, the owner of the business, his creditors, and his employees enter into a co-operative scheme for carrying on production, each specializing in furnishing certain services. The labor group furnish their time, skill, and energy. The capitalist-lender furnishes the use of his capital. The owner furnishes part of the capital and part of the time and skill, and assumes the responsibility for determining the fundamental policies of the business. The risk is divided between them. The laborer assumes most of the risks of physical harm, which arise in the processes of production, though the modern tendency is to transfer the financial hazard of accidents in large part to the employer. The laborer also assumes the risk that if the enterprise is unsuccessful, or if it develops in such a way that his services are no longer needed, he will find himself left without employment. The capitalist-lender subjects his investments to the hazard of complete loss if the business proves so unsuccessful that the entire capital invested in the business is sunk so that the loans cannot be repaid.

The owner-manager assumes the risk of failure just so far as his resources are sufficient to cover that risk. He is the primary risk bearer; if financial loss falls on the others, it is chiefly because he evades or is unable to meet, his responsibility. In meeting this responsibility, the owner-manager has a large measure of freedom of choice of methods. As was pointed out in chapter ii, he finds it advantageous to undertake research in order to reduce the range of uncertainty with which he has to deal. He may transfer a part of his burden to specialists. Certain risks, however, he must assume, and others he is likely to assume.

It will be noted that the form in which the risk of business falls upon the owner-manager is essentially different from the way in which the risk falls upon the other members of the co-operating organization. So long as the system functions in the way it is intended

to function, the product of any industry is divided by withdrawing first the shares of the laborers and the outside lenders, which are fixed in advance by agreement, and leaving the *remainder* for the owner-manager. The laborer who puts his time into a given productive process is guaranteed a certain wage and is entitled to that wage whether the enterprise succeeds or not. Likewise the capitalist who lends his money to the business is entitled to his interest, whether the enterprise succeeds or not. In theory not only the capital invested by the owner but any other resources which he may have must be exhausted before the loss, in case of failure, can properly be assessed upon the co-operating capitalists and wageworkers. The risk which falls upon the latter groups, therefore, is relatively remote, and losses fall upon them only in case the owner-manager, who is responsible for carrying the risks of the business, is unable to meet his responsibility.[1] The return of the owner-manager, on the other hand, is subject to the entire risk of the business. This is true in the nature of the case not only of those businesses where there is real risk of failure, but also in cases where success is practically assured, for it is almost never true that the exact *amount* of the total income of the business is known in advance, and whatever uncertainty exists is concentrated upon the share of the owner-manager. As a result the share of the owner-manager has a much wider proportionate range of fluctuation than does the income of the business as a whole. If, for instance, the gross income of a business varies from $800 to $1,200, and the interest and wage bills absorb $600, the income of the owner-manager will fluctuate from $200 to $600. A variability of 50 per cent in the income of the enterprise results in a variability of 200 per cent in the owner's share.

This is the characteristic which distinguishes profit, on the one hand, from wages and interest, on the other. Profit is known only as the results of the undertaking become evident, and fluctuates with every factor which changes those results, while wages and interest, whether paid to outsiders or "imputed" to the owner's own labor and capital, are determined in some way in advance. It follows, of course, that in a given case the profit may turn out to be a minus quantity. If the return of the enterprise falls short of the interest and wages agreed upon, the difference is called a "loss" instead of a profit.

[1] The necessary qualifications of this statement, with reference to corporations and limited partnerships and other cases of limited liability, are discussed below, chap. xviii.

Whether business enterprise, as a whole, yields an average profit or an average loss is an open question. The traditional economic view is that both profit and loss tend to disappear. Under free competition, capital and labor tend to flow into the most profitable openings that are available and to move out of the unprofitable. Given time enough and knowledge enough, any opportunity wherein the return remains much above the market value of the resources which it utilizes will draw to itself such a volume of capital and labor that the return to capital in it will be lowered to, or below, the normal rate by the ordinary effect of competition, and in any enterprises where the return is below normal, capital will flow out until the reduced volume of production brings the return up to normal. This process is never complete, because new inequalities are constantly appearing as old inequalities are being flattened out. The process is like the processes by which the surface of the sea seeks its level. No one ever saw the sea level, yet at every moment the crests of the waves are being flattened and the troughs filled through the ceaseless operation of the force of gravity. In like manner the crests of profits and the troughs of loss are being flattened out by the force of competition. The concept of the normal return is used just as is the concept of the sea level as a base line from which to measure deviations, not as a description of the condition existing at any moment. The hope of profit is the inducement to incur a risk, and the result of the attempt to secure profit is to destroy the opportunity to do so. Hence, profit consists of a series of temporary returns, not a continuous flow of income.

This analysis holds good, however, only so far as the uncertainty which makes profit possible actually does disappear. As Cliffe Leslie pointed out many years ago, the operation of such a tendency is contingent upon the assumption that the conditions of profit and loss become known, an assumption to which exceptions are innumerable:

> The full knowledge and foreknowledge lately claimed for political economy in modern commercial society can exist only at an opposite state of development, at which human business and conduct are determined, not by individual choice, or the pursuit of wealth, or commercial principles, but by immemorial ancestral custom. All that relates to the occupations and movements of a nomad tribe in Central Asia is known and foreknown by all its members. At the more advanced states of early agricultural society the power of prediction continues. Dynasties rise and fall, conquerors come and go, empires are shattered above the head of the village community; yet it survives unchanged. . . . .

But just in proportion as the stationary passes into the progressive condition, as industry and commerce are developed, does the social economy become complex, diversified, changeful, uncertain, unpredictable, and hard to know, even in its existing phase, at any given time. In the primitive village community the prices of commodities and the gains of producers are not only known, but foreknown, because they are customary prices. But when a market grows upon the border, when dealings with strangers are unrestricted by the tie of kinship or community, or by usage, the prices at which things are bought and sold can no longer be known beforehand, and are not even necessarily known to everyone afterwards. Production can no longer be exactly adjusted to consumption, supply to demand, both the number and the means of customers from without being unknown. And as industrial development proceeds; as labour is subdivided, and occupations multiply, and the methods of production improve; as commerce enlarges its borders and changes its paths, the unknown more and more takes the place of the known. The desire of wealth, or of its representative —money—instead of enabling the economist to foretell values and prices, destroys the power of prediction that formerly existed, because it is the mainspring of industrial and commercial activity and progress, of infinite variety and incessant alteration in the structure and operations of the economic world.

Just as from the strength of the impulses to marriage, together with observations of their consequences, you may predict that, other circumstances remaining the same, nearly the same number of young men in business will marry this year as last; so from the strength in this country of pecuniary interest, and the course of conduct it has been found for centuries to lead to, you may predict that, if business does not greatly fall off, about the same number of young men will go into it this year as last. But you can no more predict from their love of money what prices and profits the young men will get in their business than from their love of fair women what fortune they will get with their wives. And you might as well assume that, allowing for difference of age, looks, and family, and other attractions, the fortunes the wives bring will be equal, as that, allowing, according to the orthodox formula, for differences in the nature of their employment, they will make equal rates of profit on their capital. Here the real main postulate of the deductive economist comes in. They cannot, he says, make a higher rate of profit in one business than in another, because other people will not allow that if they know it, but will cut in at once. And he assumes that they do know it. He assumes that the choice of occupations and investments, and the movements of labour and capital, are determined by knowledge so accurate that the result is the same percentage of profit on capital all round, and a scale of comparative prices in proportion to the quantity and quality of the labour and sacrifices required to produce commodities, or their comparative cost of production.

Even in a modern village the innkeeper, publican or shopkeeper, who is making a small fortune, does not invite competition by telling his neighbours of his profits; and the man who is not doing well does not alarm his creditors by exposing the state of his affairs. If you take a whole country like England, it becomes a matter of accident, situation, and personal history and connexion, what a man knows about the state of any particular business.

In both home trade and international trade the migration of labour and capital has *some effect* on wages and profits, and the comparative cost of producing different commodities some effect on their comparative value and price; but, in both cases the effect is uncertain, irregular, and incalculable. In neither case is there an equalization of either wages or profits. If a particular business is known or believed to be flourishing, capital flows into it; but it also flows into businesses that are, in reality, very unprosperous. One has only to keep one's eyes open in the streets of London to see, year after year, shops fail, disappear, and reappear with another name over the window, though the locality evidently does not support them. Save in so far as the prosperity of their own business depends on that of others, the people in one trade know little or nothing of the condition of other trades, or no more than the newspapers tell them.

In truth, the choice of employment runs in a very narrow groove. There is, no doubt, a tendency of trades to localize themselves, like cotton manufacture in Lancashire, in the places with the best natural aptitudes for them. But in the degree and manner in which this localization takes place it is largely the result of want of information, and want of originality and enterprise, and is far from effecting the best distribution of industry. Men follow each other, like sheep, in flocks, though the sheep are not wise in inferring that wherever there is enough good grass for a few, there must be plenty for the whole flock that goes after them.[1]

So much may be said for the doctrine that profits tend to disappear. Other students believe that there is a tendency to a permanent *positive* return, not received by all business men but received by the *average* business man, and constituting the reward of the owner-manager group as a whole for the service of risk-bearing. Their reasons for this belief may be stated as follows: Of two opportunities, if one offers a certain return of 6 per cent, while the other may yield anywhere from nothing to 12 per cent, the former is the more attractive. Other things being equal, people prefer to put their capital into enterprises which offer the certainty of a given return rather than into those which offer a probability of the same return but no certainty.

[1] Adapted from Thomas E. C. Leslie, "The Known and the Unknown in the Economic World," *Fortnightly Review*, XXXI (1879), pp. 934–49.

Hence, doubtful enterprises do not attract capital in sufficiently large quantity to bring the return in them down to the same average level as in safe enterprises, but only down to the level where the most probable difference is sufficient to overcome the disinclination to incur risk. Profit is therefore a permanent and necessary part of the social dividend and is accounted for as the only incentive to render the service of "uncertainty bearing," which is as essential a service as that of saving capital or doing work.

This reasoning is probably correct, at least for certain types of risk, but it is by no means conclusive. It is clear that the *hope* of profit is the incentive leading men to put their capital at risk rather than to put it in safe investments, but it does not necessarily follow that speculative enterprises as a whole must necessarily return a profit to their owners. It is only necessary that there be a sufficient number of successful enterprises to keep the hope of profit alive. Some men, indeed, are so conservative and cautious that they must have, not only the possibility, but a high probability of a return before subjecting their capital to unnecessary risk, but the necessity of society's paying profit to business men does not rest upon the cautiousness of the most cautious or even the average man. All that is necessary is that for enterprises with a given degree of risk there shall be a sufficient prospective profit to attract thither the capital of those individuals who are *least* concerned about risk (or those for whom the risk *is* least), in sufficient numbers to exploit the opportunity. And it is by no means certain that for business enterprises as a whole this necessitates a positive level of profit. Certainly there are many enterprises in which society is served by uncompensated risk-bearers. Prospecting for gold is generally believed to be a case in point, and developing new inventions is probably another.

Many men are disposed to underrate risk where their own interests are involved, and society reaps the benefit of their error. Adam Smith's observations on this point are as sound today as they were in 1776:[1]

That the chance of gain is naturally over-valued, we may learn from the universal success of lotteries. The world neither ever saw, nor ever will see, a perfectly fair lottery; or one in which the whole gain compensated the whole loss; because the undertaker could make nothing by it. In the

[1] For a qualification, however, cf. chap. vii

state lotteries the tickets are really not worth the price which is paid by the original subscribers, and yet commonly sell in the market for twenty, thirty, and sometimes forty per cent advance. The vain hope of gaining some of the great prizes is the sole cause of this demand. The soberest people scarce look upon it as a folly to pay a small sum for the chance of gaining ten or twenty thousand pounds; though they know that even that small sum is perhaps twenty or thirty per cent more than the chance is worth. In a lottery in which no prize exceeded twenty pounds, though in other respects it approached much nearer to a perfectly fair one than the common state lotteries, there would not be the same demand for tickets. In order to have a better chance for some of the great prizes, some people purchase several tickets, and others, small share in a still greater number. There is not, however, a more certain proposition in mathematics than that the more tickets you adventure upon, the more likely you are to be a loser. Adventure upon all the tickets in the lottery, and you lose for certain; and the greater the number of your tickets the nearer you approach this certainty.

The contempt of risk and the presumptuous hope of success are in no period of life more active than at the age at which young people choose their professions. How little the fear of misfortune is then capable of balancing the hope of good luck appears still more evidently in the readiness of the common people to enlist as soldiers, or to go to sea, than in the eagerness of those of better fashion to enter into what are called the liberal professions.

In all the different employments of stock, the ordinary rate of profit varies more or less with the certainty or uncertainty of the returns. These are in general less uncertain in the inland than in foreign trade, and in some branches of foreign trade than in others; in the trade to North America, for example, than in that to Jamaica. The ordinary rate of profit always rises more or less with the risk. It does not, however, seem to rise in proportion to it, or so as to compensate it completely. Bankruptcies are most frequent in the most hazardous trades. The most hazardous of all trades, that of a smuggler, though when the adventure succeeds it is likewise the most profitable, is the infallible road to bankruptcy. The presumptuous hope of success seems to act here as upon all other occasions, and to entice so many adventurers into those hazardous trades, that their competition reduces their profit below what is sufficient to compensate the risk. To compensate it completely, the common returns ought, over and above the ordinary profits of stock, not only to make up for all occasional losses, but to afford a surplus profit to the adventurers of the same nature with the profit of insurers. But if the common returns were sufficient for all this, bankruptcies would not be more frequent in these than in other trades.[1]

[1] Smith, *Wealth of Nations*, Book I, chap. x.

The common statement that profit is the "reward" of risk-bearing means simply that the hope of profit is the inducement which leads men to incur the risk of a loss, not that the profit actually attained in a given case bears a predictable relation to the amount of risk actually undergone in that case. Obviously there is no conscious purpose on anybody's part to "reward" the risk-taker.

The only way in which risk enables an individual to secure a profit is by its tendency to keep others out of the field. What we have to deal with is a constant shifting of capital from one field to another in the effort to secure the maximum return for individual owners. The greater the number of capitalists who strive to enter a given field, the less the prospect of profit from investment in that field, and the less the risk the greater that number is likely to be. Almost any other force which limits the amount of capital available for investment in a particular line may give rise to profit in the same way. The only reason economists have fixed upon risk as *the* source of profit is its frequency, for if a given line of endeavor offers with certainty more than the market rate of interest and wages to those who engage in it, the other deterrents are rarely effective. If, for instance, we had numerous cases of high profits in certain lines caused by social disapproval of the enterprises, we should have to develop courses in odium and odium-bearing to complete our survey of the quest of profits. Such cases are not unknown,[1] but aside from monopoly they are so few, comparatively speaking, that there is no material error in assuming that absolutely certain opportunities for getting more than a normal return without monopoly simply do not exist.

This does not mean, however, that the uncertainty to be effective must be present in everyone's mind, least of all in the mind of the profit-seeker.[2] Profits are made most successfully by those who *know first* and reap an advantage from the uncertainty in other men's minds. As Hadley puts it:

Many of the writers who treat of the relation between business risk and business profit make the mistake of assuming that profits are an amount

[1] Money-lending in the Middle Ages and the "white slave traffic" in modern times are illustrations.

[2] In this respect the relation between uncertainty and profit is similar to that between other elements of distribution and the services which they "reward." For instance, wages may be regarded as an incentive to overcome laziness, but this does not mean they will be withheld from those who prefer work to leisure. They reward those who relieve the rest of society from overcoming its laziness. Again interest as the "reward of abstinence" is the due of those whose saving involves no conscious abstinence at all, as long as *some saving* involves the exercise of abstinence.

paid to the individual capitalist to cover his risk of loss. Far from it. They are paid to capitalists as a class for protecting the public against *its* risk of loss. They are charges which the capitalists make, not for insuring themselves, but for insuring society against the losses incident to industrial experiment and industrial progress.[1]

Or in the words of a German economist of a generation ago:

The entrepreneur must always to a certain extent carry risk, the risk of both a technical and an economic failure of production. But the significance of the risk depends on the individual. To walk on a tight rope over an abyss is obviously a frightfully risky thing for an ordinary mortal, but for a trained acrobat walking on the rope may involve no special risk at all. So it is with the entrepreneur. A business man versed in the technique of industry and commerce knows the art of keeping his balance and understands how to take business risks with success; it does not appear to him a perilous thing to establish and carry on a business, while a novice shrinks from the risk.[2]

To state the point more precisely, the significance of risk as a source of profit depends in each case on its effectiveness as a deterrent to competitive efforts to exploit the given opportunity, and its effectiveness depends on the degree of uncertainty inherent in the situation, the number of people to whom the probability of success appears great, their attitude toward the taking of risk, and the amount of capital they control. If the "supply of entrepreneur ability" is large either because the uncertainty in many people's calculations is small or because a reckless attitude prevails, risky enterprises will be developed and the percentage of failures will be high. Whether the average level of profit is high or low, whether indeed it exists at all as a positive quantity, seems to be a question of local circumstances about which no general statement of value can be made.[3]

[1] *Economics*, pp. 288–89.

[2] Kleinwächter, *Das Einkommen und seine Verteilung*, p. 287. (Leipzig, 1896.)

[3] Cannan suggests that both very risky and very safe enterprises yield less than an average return because of their undue attraction for people of abnormally high, or abnormally low, caution. (Palgrave, *Dictionary of Political Economy*, article on "Profit.") This conclusion seems to be verified by tentative results of studies of returns of stocks and bonds made under the author's direction, but this evidence is not yet complete enough to warrant a positive statement.

The statistical evidence from income studies is inadequate. King found (*Wealth and Income of the People of the United States*, p. 168) that owners of business made a somewhat higher return than hired laborers ($899 as compared with $507, in 1910), but this difference, after allowance is made for interest on invested capital, may be no greater than the average difference in wage-earning capacity of the two

Where monopoly exists it is possible to sell goods at a price yielding a profit, sometimes an enormous profit above the cost incurred, without apparent risk. In these cases the conditions which give rise to monopoly—such as patent rights, terrorism, limitation of natural resources—operate to protect the investor from competition just as in the cases we have been considering risk operates to protect him. Whatever causes operate to check the flow of investment into a given industry may give rise to an opportunity for profit in it; the cause of the monopoly operates just as risk does, but more effectively.[1]

The securing of monopolies is an extremely profitable business for the few who succeed in it.—It does not seem, however, to be more free from risk than any other business. The development and early financing of inventions is notoriously speculative. Obtaining franchises to establish public services may not involve much risk for a few whose connections enable them to do it most successfully, but their success is clearly conditioned on the degree of ignorance or uncertainty on the part of the public from whom they get the privilege, or of rival investors who might otherwise bid for it.

Most sources of profit involve either monopoly or risk.—By superior wit and by strength of will it may be possible to buy the essentials of production at a price below the market, while selling at prices based on the full market costs, thus making extraordinary profits. Smuggling goods and then selling in a market where prices depend on competition of duty paid goods; "moonshining" whiskey and

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groups. Professor Knight has summarized the evidence and the opinions of leading economists (*Risk, Uncertainty, and Profit*, pp. 364–66). He concludes that profit as a whole is negative. For a fuller summary of the scanty evidence, cf. Porte, *Entrepreneurs et Profits industriels*, pp 182–215.

[1] It should be noted that in strict logic the return which accrues to the owner of a monopoly, after the value of his opportunity has been definitely established, is really a part of his interest, not his profit. Once the amount is known which can be gotten out of, for instance, a patent, the patent itself has a value which capitalizes that return, and the return becomes interest on that capitalized value. The *profit*, which comprises the whole capitalized value of the patent, minus the cost of obtaining and developing it, arose at the time the value attached itself to the patent, that is, at the time uncertainty passed into certainty. (Indeed it accrued in part before that, for as soon as it becomes *highly probable* that the patent will have value, it acquires a value which discounts that probability.) So with other cases—the return from a monopoly of certain quality of land is, after all, only the rent of that land, no different in character from any other rent. *Profit* arises when the income producing power of the land is increased by the formation of the monopoly, not when the higher rent is collected afterward.

selling in a market where the tax is a main element in the market price, are examples. "Outbargaining" labor or shrewdness in securing capital on favorable terms works out likewise. There does not seem, however, to be any necessity for erecting these gains into a distinct distributive share or regarding them as exceptional. The question is always, not "What is the specific source of profit?" but "Why does not the competition of other managers destroy the profit in exploiting that source?" The cases cited all seem to resolve themselves into cases where competition is reduced on account of risk—as in the smuggling industry, or into special aptitude for bargaining, which must be recognized in determining the wages of the bargainer, or into some form of monopoly. Frequently, for example, a local group of laborers may be exploited because only one opportunity for employment is accessible to them; the opportunity to profit by such a situation is a simple case of monopoly of location.

Risk and control are closely associated.—In the preceding discussion the effect of risk on profit and on business organization has been discussed on the assumption that the two functions of carrying risk and appropriating profit are associated with the exercise of control. The combination of these three elements is the root of the present system of industry, and is commonly referred to as the right of private property. Some of the social results of this combination and some of the ways in which the traditional relationship of its elements are being modified are discussed in chapter xviii; our present interest is to note that the dominant figure in present-day industrial and commercial organization, the business man, owner-manager, or entrepreneur, as he is variously designated, owes his position to the supposed advantages of vesting control in those who are financially able and are willing to assume the risks of industry and the responsibilities of control for the sake of an opportunity to reap a more or less uncertain reward in the form of profit. We must now consider some of the qualifications for successful entrepreneurship.

Certain mental attitudes and characteristics are necessary for administration and operate more or less crudely to select the individuals on whom responsibilities of business shall fall. Without attempting an exhaustive survey, attention may be directed to four of the qualifications which seem to be most directly significant in the selection of business managers. The first is *business judgment*, the second is *willingness to incur risk*, the third is *open-mindedness*, the fourth is *decision.*

All these qualities have to do with one's attitude toward uncertainty. By *judgment* we mean here simply the ability to weigh the known elements in a situation and determine the most probable situation with respect to the unknown. *Willingness to incur risk* involves several characteristics. A large element in it is confidence in one's own judgment. This is something quite distinct from the ability to form a correct judgment. As Professor Knight says:

> . . . . There is diversity in conduct in situations involving uncertainty due to differences in the amount of *confidence* which individuals feel in their judgments when formed in their powers of execution; this degree of confidence is in large measure independent of the "true value" of the judgments and powers themselves. . . . . It is a familiar fact that some individuals want to be sure and will hardly "take chances" at all, while others like to work on original hypotheses and seem to prefer rather than shun uncertainty. It is common to see people act on assumptions in ways which their own opinions of the value of the assumption does not warrant; there is a disposition to "trust in one's luck."[1]

Next to business judgment this quality of confidence in and willingness to act on one's best judgment where certainty is absent seems to be the most decisive factor in determining whether one shall be among those who occupy positions of responsibility—indeed, so far as the *choice* of managers is concerned this factor of willingness to accept responsibility is perhaps more important than the ability to form correct judgments, though less important in determining the manager's success. The other two qualifications for dealing effectively with risk, decision and open-mindedness, may seem at first to be inconsistent with one another, but they are not. By *open-mindedness* we mean the ability and willingness to change our decision or opinion as soon as the appearance of new evidence makes it appear that our former position was wrong; by *decision* the ability and will to stick to a judgment once formed until such reason for change has actually appeared. Efficiency in business management, as in most responsible tasks, requires that one steer a middle course between two extremes. On the one hand, we have the vacillator, the wobbly-minded man who, having chosen one line of policy on a doubtful issue, cannot forget the alternative and is constantly reopening the issue and debating the question over without any new evidence on which to decide. At the other extreme we have the "bullhead," the man who, having chosen an alternative, sticks to it with obstinacy, refusing to be

[1] F. H. Knight, *Risk, Uncertainty, and Profit*, p. 242.

influenced by new evidence which may make the grounds of his original choice no longer valid. There are none so blind as those who will not see.

Of these qualities only the first, *business judgment*, needs more extended discussion. As indicated above, judgment means the ability to form a valuable conclusion in a case where the evidence does not suffice to establish certainty. But not all cases of uncertainty call for the exercise of judgment. The determining factor is not the presence of uncertainty but the character of the uncertainty, that is, the exactness with which the *degree of probability* is known.

Estimates of probability fall roughly into three classes.[1] There are, first, a few cases where a quite definite mathematical estimate of probability can be reached, as, for instance, that a result will be of one character seven times out of a hundred, of another character ninety-three times. Many gambling transactions are of this sort, but illustrations are rare in ordinary business. The Goodyear Company, in 1921, issued a series of 8 per cent bonds, one-fortieth of which, drawn by lot, are to be paid at $120 per $100 bond every six months for twenty years. It is clear that the probability of an investor's securing a 20 per cent bonus for the use of his money for six months, twelve months, or any other definite period can be figured mathematically, and the speculative value of this chance can be computed with corresponding precision. No "judgment" enters into this calculation.

A second and larger class of cases affords what may be called a statistical basis for action. These are cases where no uniformity of results could be predicted from the nature of the case, but study of past results shows that uniformities have appeared with such persistency that we assume they will continue to appear. This is the justification of most business research, as distinguished from technological research. The merits of specific selling devices, specific methods of wage payment or organization of the labor force, or specific types of financial instrument cannot be judged even approximately by a single case; but by collecting, organizing, and studying a mass of representative cases results of great accuracy can be obtained. Here again if the evidence is sufficient to establish the degree of risk accurately, as it is, for instance, in many life insurance calculations, no exercise of judgment is involved in the estimate of probability.

[1] Cf. Knight, *op. cit.*, pp. 214–16, 224–26.

Cases of uncertainty where neither the mathematical nor the statistical basis of determining probability is available call for the exercise of what we call "judgment."

These are cases where the events to be feared are so rare, or the difficulty of forming homogeneous classes among them as a basis for statistical generalization is so great, that there is no adequate basis of experience for judging whether they will take place, or what is the probability of their taking place. Thus, while the probability that a given individual chosen at random is a thief might be tested statistically, the probability that a certain known individual is a thief is often quite unattainable. His early training, his beliefs and habits, his family responsibilities, his age, and a hundred other things have to be weighed, and there are not enough people who are alike in all these ways to afford a basis for a statistical study. The judgment of a good student of human nature on the question, nevertheless, has a greater value than that of a poor student, though either may be wrong and either may be right.

The method by which these cases are handled, in the author's opinion, is in essence a very crude application of the statistical method.[1] That is merely another way of saying that our judgments, if they have any value at all, are based invariably on some sort of experience with similar cases, either our own experience or that of others. The cases from which we judge may be too few to lend themselves to statistical tabulation, or too widely different for comparison, but if we use them at all it must be through a crude, perhaps unconscious, application of what is essentially the same process as is employed in the statistical method. The difference between good judgment and bad judgment resolves itself into (1) a difference in the amount of data made available by personal experience or by education, (2) the ability to classify that experience so that only the relevant items enter into the judgment, and (3) the ability to give proper relative weight to the items which make it up.

Of these the last is the most difficult. The tendency is (1) to overvalue one's own experience in contrast to that of others, (2) to overvalue the evidence which points to a conclusion coincident with our own desires or interests, and (3) to overvalue the recent experience contrasted with that which is less fresh in our minds. To overcome these tendencies is to gain immensely in skill at forming judgments. And no one should feel chagrin if, having taken into consideration all

[1] See Note 1, at end of chapter ii.

the available data and applied his most careful judgment, the event proves him to have been in the wrong. No excellence of judgment can eliminate the sphere of uncertainty; it can only tell us what is most probable. If the improbable happens, the judgment of the reckless plunger who foretold it is not thereby vindicated nor that of the careful student discredited. Only average results over a period of time can furnish a test of skill. Herodotus states the point aptly thus:

There is nothing more profitable for a man than to take good counsel with himself; for even if the event turns out contrary to one's hope, still one's decision was right, even though fortune has made it of no effect: whereas if a man acts contrary to good counsel, although by luck he gets what he had no right to expect, his decision was not any the less foolish.[1]

A more detailed survey of what is implied in the formation of a business judgment is given by a psychologist in the following terms:

The conception that business acumen is an indefinable, intangible something, outside the realm of educability, is widely held. Nevertheless, psychologists have long insisted that intellectual insight and ability, whether in business or in anything else, are the products of perfectly definite causes, in part hereditary, but in part acquired, and hence, presumably, susceptible in some degree to discipline. Educators have long prescribed practical methods for training reasoning ability in school. There would seem, therefore, to be no good reason why schools of business administration should not definitely avow as one primary aim the cultivation of ability to make sound business judgments, even granting that it may require actual business experience to develop that ability to its maximum degree.

Business judgment differs from judgment in other fields only in the materials with which it is concerned—business problems and business facts—and in certain minor details consequent upon the peculiar nature of those materials. In its psychological mechanisms it is not fundamentally unlike scientific method, or legal reasoning, or reflective thinking in any other field; although the frequent short-circuiting or condensing of the process, made possible through long practice and through familiarity with a definite field, into what has sometimes been called "practical judgment," often obscures some of the component factors. Judgment, or reasoning, or reflective thinking (which terms, for our purposes, we may regard as synonymous) may be described as essentially a complicated kind of behavior by means of which the individual adjusts himself to new problems presented by an ever changing physical and social environment; problems which the ready-made adjustment mechanisms of instinct, habit, and memory are incapable of solving. Reasoning is made possible by the reorganization and re-utilization of the element of previous experience in new

[1] Quoted in Keynes, *A Treatise on Probability*, p. 307.

forms. It is no unique operation; it involves the same mechanisms of associative recall and discrimination as the simpler operations of perception, habit, and memory, although on a somewhat more elaborate scale, and is ordinarily marked by greater hesitancy and conscious purposiveness. The mental content in which these mechanisms find embodiment varies with the nature of the materials and the habits of the individual thinker. It may take the form of vocal or silent speech symbols, mental imagery of various sorts (visual, auditory, or motor, verbal, or concrete), or incipient—or even overt—gestures, impulses, and attitudes, although the modern psychologist is inclined to regard their precise character as of less significance than the use made of them.

Reasoning activities vary widely, of course, in scope and complexity. An "act of business judgment" may denote anything from an instantaneous sizing-up of and acting on a relatively simple situation, to the involved investigations and prolonged deliberation leading up to a momentous business decision or the adoption of far-reaching business policies. Sometimes the basic data of the judgment are definite and complete; sometimes so obscure that a judgment is almost a leap in the dark, and even the shrewd executive cannot put his finger on the specific factors which determine his decision. But in all such acts we find, explicit or implicit, common factors and operations. Seldom is it possible to trace these as temporally distinct and successive stages, so varied are the modes in which they may be subordinated, merged, reversed, and repeated. Nevertheless, we may conveniently take as a point of departure for our search for ways of training judgment five stages or elements, corresponding in the main to those "steps" which Dewey[1] has made familiar to students of education.

1. A felt difficulty
2. Its location and definition
3. Suggestion of possible solutions
4. Their elaboration and evaluation
5. Belief, decision, action

Let us examine these factors in greater detail, to ascertain what suggestions they may afford for our problem of training.

1. *A felt difficulty.*—The indispensable precondition of all thinking is something to think about, a problem too complex or too novel to yield to such simpler and less burdensome methods of attack as instincts, habit, or memory. It may be either an intellectual or a practical difficulty, present or anticipated. Such a predicament serves as the stimulus for thinking, and determines the direction thought shall take. "Use your head! *Think* about it!" is the most futile—yet by no means the most infrequent—advice a teacher ever gives a stupid pupil who can see no problem about which to think—other than the eminently practical problem of getting the teacher

[1] John Dewey, *How We Think*, chap vi. (Boston, 1910.)

to "lay off him." Recognition of this fact has led to the increasing vogue of the "project-method" or "problem-method" or "case-method" of organizing educational procedure.

The business man's problem may perhaps assume the form of an emergency demanding action, but no action suggesting itself; or a suggestion of doubtful merit may come to mind; or two or more possible courses of action may suggest themselves, necessitating deliberation and choice. If, as often happens, the problem makes its first appearance in very definite form, the second and perhaps the third of the stages enumerated may be omitted—or rather, condensed into the first, in the way previously mentioned. The task then becomes one of weighing and evaluating these suggestions. But sometimes the situation is so involved in character that its key is not apparent, and the second step mentioned, that of defining the problem and locating the difficulty, becomes the immediate task.

2. *Defining the problem.*—This is essentially a matter of analyzing the situation into its factors, significant and non-significant. Thus, a slump in sales in a given territory may conceivably be due to any of a considerable number of factors, and a large part of the task of relieving this particular difficulty consists in analyzing the situation into its factors, geographical, financial, personal, social, political, etc., and determining which are significant and to what extent. Only then can one look for an adequate solution to suggest itself. The problem may, on analysis, define itself as essentially a problem of (*a*) putting in more efficient salesmen; (*b*) meeting prices or terms of a local competitor; (*c*) improving transportation or delivery conditions; (*d*) counteracting harmful propaganda; (*e*) making connections with new dealers; (*f*) stimulating present dealers to greater efforts—or something else. One or another of these, in turn, may call for still further definition.

It will be evident that only one who has a thorough familiarity with the subject-matter to which the problem relates can tell at a glance which factors are significant and which are not. We cannot insist too strongly that no efficient thinking about any problem can be done without a *knowledge of the facts* in the case. Contrary to a notion that is still altogether too popular, reasoning is no empty, formal, logical gymnastic, in which one can exercise himself into expertness without regard to the peculiar nature of the materials involved. No matter how good a thinker a man may be in his own field, he can never carry over 100 per cent thinking efficiency to a field in which he is not at home. True, his previous training in thinking may be of assistance to him in acquiring familiarity with a new body of material, in mastering the strange viewpoints, terms, principles, and technique; but only actual mastery of the raw materials can make possible good judgment about any sort of problem. We see daily illustrations of foolish and incompetent judgments uttered by men who are experts in their own lines, but whose opinions, when they venture into territory filled with unfamiliar facts, principles, and technique, are not only valueless but indeed socially

injurious, simply because their susceptible readers fail to make this fundamental distinction.

During this analytic stage a sifting process has been going on. A host of irrelevant details, offering no promise of help, have quietly dropped out of sight. Simultaneously, certain others have proved suggestive, pointing out hopeful lines of inquiry, and rising to positions of central importance in dominating thought and determining the direction it shall take. So we reach the third stage, that of suggestions of solutions.

3. *Suggestion of solutions.*—Suggestion or association is a fundamental psychological principle, basic in all habit and memory. We recall a thing only when an associate, sensory or ideational, is at hand to suggest it; in the absence of such stimulus we are helpless. We can, however, actively aid the recall process by assembling before us all available stimuli, in the hope that one or another will have retained a sufficiently strong connection to suggest the thing we are seeking. Now an analysis of any problem does just this: it brings out and impresses on us certain vitally significant facts to which we must look to suggest the way out. These serve to set limits to the range of "trials and accidental successes" which play so central a rôle in all problem-solving, whether on motor or ideational levels. If we have had previous experiences of the particular type to which our problem belongs, such associations will naturally have been established, and suggestion will occur actively.

Here again is evident the vital necessity of a background of knowledge. The business man confronted with a problem of a sort entirely foreign to his previous experience feels helpless, because absence of associations gives him no clue to the way out. Mistakes of judgment are often directly traceable to inadequate knowledge and consequent insufficiency of possible suggestions, or to inadequate appreciation of the implications of such suggestions as do arise. Probably the most common of all logical fallacies is overhasty generalization. A single experience, or a striking occurrence, is elevated to the dignity of a general truth and applied indiscriminately to all sorts of situations, usually with disastrous results. Business men fail, more often from incapacity than for any other reason, and incapacity usually means ignorance of things one should know about his own business. On the other hand, the leader in the financial and industrial world is not infrequently a man of remarkably wide information concerning matters psychological, social, political, geographical, historical, and scientific, which to his smaller-minded contemporary seem irrelevant and useless. Nevertheless, it is just this rich background that suggests to him the probable effects upon general business conditions, and hence upon his own affairs, of influences apparently remote, and yet real, and thus enables him to prepare for future contingencies. Those business men who were hit hardest by the post-war depression were, in many cases, those who a few years before knew only that the way to greater profits was by buying larger stocks on rising

markets, but who did not have that larger knowledge of social and economic conditions, past and present, which would have warned them of what must inevitably follow.

Let us recall once more that familiarity and practice make for short cuts in this associative process, so that as soon as the problem appears, a course of action may suggest itself, even though we do not stop to trace the path—or perhaps not even be able to do so if we try—which logically leads from the one to the other. The series, "A-B-C-D-E," built up in the past, becomes condensed and short-circuited into the direct association, "A-E." This facility in practical judgment is a priceless asset to the executive; such judgments constitute a large part of his everyday thinking. But behind his quick and certain judgments, which evoke our admiration, we may be sure there lies a history of years of faithful, often tedious, accumulation of intellectual capital and rigid discipline in its use.

Akin to these practical judgments are those uncritical and unanalyzed impulses which we call "hunches" or "intuitions," and which play a disproportionately large part in some people's decisions. Such judgments differ from the kind we have been describing not in their essential elements but simply in the greater obscurity of the specific factors, both in the objective situation and in the individual's personal history, which stimulate the suggestions and determine the decision, and hence in the relatively greater part played by feeling and impulse. Sometimes, it is true, a man's feelings and impulses have been unwittingly trained by long experience, so that his "hunches" are better than mere lucky guesses, even though he be incapable of making the self-analysis that would bring their historical origins to light. But let us not overlook the fact of our proneness to remember and overstress our fortunate guesses, and to forget our mistakes, and so to develop a superstitious reverence for our "intuitions." In spite of their occasional inevitability, it is unsafe to form the habit of substituting such impulses for critical judgments, if we can possibly find any basis for critical judgments.

If the operations thus far described—discriminative analysis of the problem, and associative suggestion of solutions—have sufficed to overcome all inhibitions to action and induce that attitude of readiness to act which we call belief, decision and action follow automatically. If not, we proceed to seek for further evidence of the relative practicability of our hypotheses. This constitutes the fourth stage of our schema—the elaboration and evaluation of the suggestions; and this is what distinguishes critical reasoning and sound judgment from uncritical opinion, impulse, or fancy.

4. *Elaboration and evaluation of solutions.*—By *elaboration* is meant the consideration of such consequences, positive or negative, agreeable or disagreeable, as may be expected to follow from this or that course of action. This again involves associative suggestion, and efficiency in doing it depends directly on whether or not the individual has sufficient acquaintance

with the facts in question to know what their consequences may reasonably be expected to be. Some of this knowledge comes from study or reading; some of it comes from first-hand or second-hand experiences with people and things. To a large extent, the implications which one who makes business judgments must consider are social, involving an understanding of how people act, individually or collectively. When we consider extending credit to a man we want to know about his past career, his present habits, his future purposes, in order to be able to predict the probable outcome of our venture. When we consider investing, or enlarging our business, we are anxious to know how "conditions" will be in a year or two years or five years, which means simply that we want to know what the mass of buyers, sellers, investors, and workers are likely to be doing, testing-out of the hypothetical conclusion is called for. We may test hypotheses in various ways. We may try out our plan experimentally on a limited scale to ascertain whether it will work as we expect. Or we may try it out on the "reflective level" by testing it against other accepted general principles, or with the testimony of competent authorities, books or persons, on similar or related problems; or we may submit our data, methods, and conclusions to competent critics to discover possible omissions or errors. One of the marks of the wise business man is his judicious choice of counselors.

5. *Action.*—After the problem has been defined, suggestions for its solution reached, elaborated, and evaluated, one of two things happens. If the process has been unsuccessful, it is repeated and new analyses and solutions attempted. If it has been successful and the attitude of belief has been induced, the final stage, that of *action*, takes place. The consummatory act need not, of course, follow immediately. The direct outcome of a reasoned business decision may be a more or less explicitly formulated program for future action. If the decision covers a whole class of anticipated situations, we call it the formulation of a policy. The realization of these conditions then automatically brings the act which consummates the process; the crucial point was reached and passed when the act of decision was accomplished. What has been said about the ever-imminent dangers of hasty generalization, of undue susceptibility to emotional bias, of the urge of impulse and prejudice, of post-rationalization of motives, and like enemies of logical thinking, means simply that a critical attitude is no less essential for sound business judgment than for sound scientific judgment.

To develop good business judgment, then, is not a hopeless undertaking. Indeed, assuming reasonably good quality of brain stuff, good judgment is acquired by a student in no other way than through training—that is, through practice in discovering problems to think about, in getting, reflecting on, and working over the indispensable capital of knowledge, in analyzing problems and sifting facts, in organizing data and keeping them organized to facilitate suggestions, in guarding against too hasty generalizations or

emotional bias, in maintaining an attitude of suspended judgment, in critically verifying hypothetical conclusions. And to train him in doing these things is a primary function of the school of business.[1]

NOTE I

UNMEASURABLE RISK AND THE NATURE OF JUDGMENT

The contrary view to that expressed in the text, page 46, is held by Professor Knight, and is made central in much of his treatment of the theory of risk. In his view, cases where there is no statistical or mathematical basis for determining the degree of probability are the only cases of true uncertainty, and the decisions in which they figure are not based on anything comparable to the statistical method at all. The only way of dealing with these risks is to *assume* them, acting on the hypothesis which is *estimated* to be most plausible. The making of such an estimate he seems to regard as a purely reflex act of consciousness, concerning which nothing really significant can be said:

The mental operations by which ordinary practical decisions are made are very obscure, and it is a matter for surprise that neither logicians nor psychologists have shown much interest in them. Perhaps (the writer is inclined to this view) it is because there is really very little to say about the subject. Prophecy seems to be a good deal like memory itself, on which it is based. When we wish to think of some man's name, or recall a quotation which has slipped our memory, we go to work to do it, and the desired idea comes to mind, often when we are thinking about something else, or else it does not come, but in either case there is very little that we can tell about the operation, very little "technique." So when we try to decide what to expect in a certain situation, and how to behave ourselves accordingly, we are likely to do a lot of irrelevant mental rambling and the first thing we know we find that we have made up our minds, that our course of action is settled. There seems very little meaning in what has gone on in our minds, and certainly little kinship with the formal processes of logic which the scientist uses in an investigation. We contrast the two processes by recognizing that the former is not reasoned knowledge, but "judgment," "common-sense," or "intuition." There is doubtless some analysis of a crude type involved, but in the main it seems that we "infer" largely from our experience of the past as a whole, somewhat in the same way that we deal with intrinsically simple (unanalyzable) problems like estimating distances, weights, or other physical magnitudes when measuring instruments are not at hand.

We know that estimates or judgments are "liable" to err. Sometimes a rough determination of the magnitude of this "liability" is possible, but more generally it is not. In general, any determination of the value of an estimate must

[1] Adapted by permission from Forrest A. Kingsbury, "Business Judgment and the Business Curriculum," *Journal of Political Economy* (June, 1922), pp. 375–88. It may be noted that the term "judgment" is used in this selection in a slightly broader sense than that in which the author has used it above, to include cases where absolute certainty is finally attainable.

be secured by the tabulation of instances of accuracy and inaccuracy of similar estimates, thus reducing it to a probability of the statistical type.

The theoretical difference between the probability connected with a mere estimate and that involved in statistical calculations such as those used in life insurance, is clearly discernible. Take as an illustration any typical business decision. A manufacturer is considering the advisability of making a large commitment in increasing the capacity of his works. He "figures" more or less on the proposition, taking account as well as possible of the various factors more or less susceptible of measurement, but the final result is an "estimate" of the probable outcome of any proposed course of action. What is the "probability" of error (strictly, of any assigned degree of error) in the judgment? It is manifestly meaningless to speak of either calculating such a probability *a priori* or of determining it empirically by studying a large number of instances.

Yet it is true, and the fact can hardly be over-emphasized, that a judgment of probability is actually made in such cases. The business man himself not merely forms the best estimate he can of the outcome of his actions, but he is likely also to estimate the probability that his estimate is correct. The degree of "certainty" or of confidence felt in the conclusion after it is reached cannot be ignored, for it is of the greatest practical significance. The action which follows upon an opinion depends as much upon the amount of confidence in that opinion as it does upon the favorableness of the opinion itself. The ultimate logic, or psychology, of these deliberations is obscure. We must simply fall back upon a "capacity" in the intelligent animal to form a more or less correct judgment about things, an intuitive sense of values. We are so built that what seems to us reasonable is likely to be confirmed by experience, or we could not live in the world at all.[1]

The issue here raised is fundamental. The view of the nature of business judgment just quoted is in harmony with Professor Knight's view of the nature of these cases of unmeasurable uncertainty. If the uncertainty we cannot measure is of a totally different character from that which we can reduce to a mathematical ratio by statistical surveys, if there is indeed no objective basis for an opinion of probability, it must be conceded that the only way we can deal with it is by a pure creative act of intelligence, "an intuitive sense of values" (or, more accurately, a recognition of truths yet to be born).

In the view of the present writer, however, such a hypothesis, while hardly capable of disproof, ought not to be accepted until other alternatives have been found untenable. Reliance on an intuitive sense of values, as a means of prediction of occurrences outside our own spiritual experience, is practically indistinguishable from sheer blind guesswork, dependence on which is indeed psychologically thinkable but, we hope, not our final and only resource in dealing with problems of uncertainty.

Rather it appears probable that the cases of "statistical probability" and the cases of "true uncertainty" are essentially alike, differing only in the amount of information we happen to have at hand to deal with them,

[1] Knight, *op. cit.*, pp. 211, 225–57.

the length of time necessary to accumulate a line of cases big enough to establish a statistical frequency, or the fineness of the classification we are using. All applications of the law of averages rest on a grouping of things, unlike in many respects, into classes, on the basis of certain similarities; if cases nearly alike are infrequent, we must do our grouping on the basis of less homogenous classes. If the classification is crude, or if the cases are not numerous, the statistical method loses its accuracy. But these cases certainly shade off into Professor Knight's "true uncertainties" by imperceptible degrees, the margin of error getting larger as the evidence grows more scanty.

There are, indeed questions concerning which no evidence whatever exists, but it does not appear probable that the human mind is equipped in any way to grapple with them. And if any basis for judgment does exist there seems to be no way to exercise it except to throw our cases into crudely formulated "like cases," and form an opinion on the basis of the preponderance of the evidence. That the process is largely automatic and unconscious is of course obvious.

The view that the so-called "true uncertainties" are cases which would show statistical regularity, if a sufficient number of like cases were available for comparison, is confirmed by the fact noted by Professor Knight[1] that the totally unpredictable cases do show some tendency toward regularity when grouped with other similarly unpredictable data.

QUESTIONS

1. The ultimate effect of improvements in business methods is usually to lower prices to consumers, yet society depends on the self-interest of business men, through profits, to secure the adoption of improvements. Is this rational?
2. Profit is sometimes stated to be a compensation for the "irksomeness" of riskbearing. Discuss.
3. Can you cite cases where profit is collected without either monopoly conditions or significant risk, *a*) temporarily? *b*) permanently?
4. Outline (*a*) the qualities which enable one best to become a business manager; (*b*) those which fit one best to succeed as a business manager.
5. What do you mean by "accepting responsibility?" Would the expression mean anything in the absence of uncertainty concerning the outcome of one's decision?

[1] *Op. cit.*, p. 239.

CHAPTER IV

WAYS OF DEALING WITH RISK: TRANSFER TO SPECIALISTS—*Continued*

Besides the general system of organization which results in a transfer of risk from capitalists and laborers to business enterprisers, specialization has produced numerous types of organization to which it is possible to transfer certain of the risks of business. Indeed, specializing in risk-bearing is one of the most striking phases of our modern differentiation of functions and functionaries. The most conspicuous illustration is of course the insurance company, but there are a great many others. Corporate suretyship, guaranty of real-estate titles, guaranteed collection services, and the hedging facilities offered by produce exchanges are illustrations.

The assumption of risks for others looks at first like an extremely hazardous way of building an income. It is not necessarily, however, more risky than other forms of business enterprise, for the risk-bearer is usually better able to carry the risk than is the one from whom it is removed. This superiority may be due to superior knowledge of the situation, as when a title-guaranty company investigates a real-estate title, satisfies itself that there is no real risk, and then guarantees the validity of the title. The owner of the property gets rid of the risk by transfer, the guaranty company assumes it, but reduces it to a minimum by research.

In a second class of cases the risk is transferred to a specialist who is able to reduce it by prevention. This is illustrated when an investment bank guarantees the sale of a bond issue, knowing that its own indorsement will assure the success of the flotation, or when a steam-boiler insurance company issues a policy to protect the owner of a plant and then furnishes an elaborate and efficient inspection service to reduce the hazard of loss. In a third class of cases the reduction of risk arises from the fact that the specialist who assumes the specific risk combines it with a great number of others and so reduces the amount of uncertainty, and hence the amount of risk through operation of the law of large numbers. This is the basic principle of most forms of insurance.

For all these forms of enterprise the chief hazard is not the hazard insured against, but the risk of failing to get sufficient business to furnish a working basis for the law of large numbers, or to repay the costs of organization.

It should be noted, however, that in all these cases the substitution of certainty for uncertainty effects a saving of indirect losses resulting from the event insured against, even though the direct losses are not reduced in number. Fire insurance affords a convenient illustration. Suppose that in the space of five years on an average 1 per cent of buildings of a certain type are burned and that the cost of selling insurance, keeping track of the business, investigating claims, etc., together with the profits of the insurance company, brings the cost of insurance on such buildings up to 2 per cent. Suppose A insures and B refuses to do so. It is evident that in the long run A will pay out twice as much for insurance premiums as B will lose by fires. But if B has only one or two buildings, the "long run" necessary to make him fairly sure of this saving will be a great deal longer than his lifetime. Instead of saving the difference between the amount of the premiums and the average or normal loss, he gambles for the saving of a larger amount. If he is lucky enough to have no serious fires, he saves the whole premium. If his building is destroyed, he probably will never live long enough to save the amount lost out of his insurance premiums. Moreover, if he has his whole capital sunk in one building he has no chance to save any of the loss in this way until he has accumulated enough to put up another building. If the building is used for business purposes, moreover, its destruction is likely to mean not only the loss of the value of the building, but also the loss of business, good will of customers, etc. Part of this loss is unavoidable, but an insurance policy which enables one to rebuild quickly or to pay off debts which have been secured by the building may enable him to save a large part of this indirect loss.

One of the most important risks with which we have to deal is that which arises from the uncertainty of the length of human life. This takes two forms—the risk that one may live so long as to use up the funds which he has provided to support himself in old age and the risk that he may die before the end of his normal working life. Each contingency needs to be provided against.

The first is taken care of in large part by the method of reserves, the individual setting aside a part of his earnings as a provision for old age, a larger part in many cases than would be necessary if the

length of life were known. The life annuity is a special device for taking care of this risk. This is a contract whereby an insurance company or other corporation agrees for a fixed sum to pay a given individual a stipulated income so long as he lives. For one who will live only an average period, the contract is not ordinarily an attractive investment, but it relieves him of the risk of using up all his savings and coming to want because of an unexpectedly long life. The pure endowment is another contract which insures against a risk arising from the length of life. It is similar to an annuity except that the person taking out the contract pays his money in annual instalments for a term of years, and at the end of that time receives a lump sum. If he dies within the stipulated time, nothing is paid by the company. Such contracts have been used in Europe by parents to provide for the expense of higher education of their children, or to provide dowries for daughters. Endowment-life policies combine pure insurance and pure endowment in one contract.

The second type of risk connected with human life is the risk of death before one's normal working life is completed, with consequent loss of earnings. The way which this risk is shifted to insurance companies will serve as an illustration of what we mean by the elimination of risk through specialization and combination. For the individual, there is nothing more uncertain than the duration of his life. For the insurance company, on the other hand, the insurance contract involves very little risk. Which of the insured will die no man knows; how many will die, if the number of insured is large, can be predicted with great accuracy. Hence the company can profitably sell the insurance at a price at which it is a good bargain for the insured.

Outside the fields of fire and life insurance, the most important branch of the insurance business is marine insurance. Newer types which are gaining rapidly in popularity are burglary, plate glass, automobile, and credit insurance. In all these cases, the principle is the same. If a business has a large enough number of risks and if the risks are independent of one another, it is likely to be cheaper not to insure, for unless the insurance company receives a great deal more in premiums than it pays out for losses it cannot continue to do business. A railroad company need not insure its station buildings, and a large business owning many buildings with plate-glass windows need not insure them against breakage. The amount paid out in premiums will be greater than the amount needed to replace the damage. In

the same way, a large number of small risks of different kinds may be allowed to offset one another. Wherever such a distribution of risk cannot be secured, however, assuming that the expense loading and profits of insurance companies are not excessive, all insurable risks should be insured against, for the insurance company, having a wider distribution of risk, can definitely count on a smaller variation in the number of losses than can any one individual, and hence can get along with smaller reserves withdrawn from active business use to guard against the impairment of working capital.

The field covered by insurance companies, however, is much narrower than the field of risk involved in carrying on business. For a risk to be well adapted to insurance and elimination by combination, two conditions are necessary. There must be available for insurance coverage a large number of *independent* risks, and the probability of the occurrence of the event insured against must be known with fair accuracy. If the first condition is absent the insurance is speculative; if the second is absent it is impossible to determine a fair rate, as the combination of risks does not afford knowledge as to the total losses to be anticipated. Insurance under either of these conditions involves simply a transfer of risk from one individual to another, without reduction, and is speculative in character. To meet the need for insurance or for protection against various types of loss where no statistics are available from which to calculate the expected loss, or where no proper distribution of risk can be obtained, the Lloyd's type of speculative insurance has been developed. In this type of contract, a large group of private insurers enter into a contract by which they agree to recompense the insured for his loss dividing the cost between themselves. For example, people in Washington owning property along the line of march of the inaugural procession sometimes insure themselves against loss from bad weather on the fourth of March through the London Lloyd's. The insurers in this case may secure a distribution of risk, in spite of the fact that if they have a loss on one policy they will have a loss on every policy of this type. This is done by diversifying the contracts. If the individual insurer writes many policies and none are large, he secures a combination of risks which protects him against excessive loss. But there is a large speculative element involved in the fixing of the premium rates. Protection against drought is of this character. So long as such policies are written to cover a bona fide risk and not for speculation, they are as

useful as any other type of insurance, but the device obviously lends itself admirably to gambling and is often used for that purpose.[1] In the earlier days of life insurance, it was permissible for anyone to take out insurance on the life of anyone else, and policies practically of the Lloyd's type, on the lives of public men were often taken out purely for gambling purposes.

Very similar to the speculative type of insurance is the practice of hedging. This is the practice of making two contracts at about the same time of an opposite, though corresponding, nature—the one in the *trade* market and the other in the *speculative* market.[2] The same possibility of using a contract either for the purpose of hedging a legitimate risk or for the purpose of creating a gambling risk which we say in the Lloyd's contracts arises in connection with these "future contracts" on the produce exchanges. When a grain merchant sells a future contract to hedge against a fall in prices while he is marketing his purchases of cash grain, or a flour-miller buys a future contract to protect himself against loss while he is manufacturing flour which he has agreed to deliver, they are securing protection against a definite risk in much the same way that one secures protection against unknown hazard through Lloyd's policy, but in both cases the only way that the insuring or hedging individual gets rid of his risk is by transferring it to someone else who assumes it as a speculation. The whole machinery of the produce exchange finds its justification in the facilities which it affords for carrying on certain types of business with a minimum risk and consequently at a minimum cost. There is no question that it is sound business policy to make use of the hedging market wherever a hedging contract can be secured on reasonable terms, but the existence of a hedging market presupposes the existence of a group of speculators who are taking the risk off the business man's shoulders, and there has as yet been found no way to keep these contracts from being bought and sold in a purely gambling spirit.

Another way of transferring risk is what is known as "contracting out," a method similar to hedging, but not involving the use of a speculative futures market. Contracting out may be explained briefly as follows:

The work of the organized exchanges has certain sensational elements, and volumes have been written upon these exchanges where sentences have

[1] For fuller discussion cf. chap. xiv.

[2] S. S. Huebner, "The Functions of Produce Exchanges," *Annals of the American Academy of Political and Social Science*, XXXVIII (1911), 392. For fuller discussion, cf. chap. xii.

not been written upon the vastly greater volume of speculative contracts entered into outside the limits of the organized exchange. These speculative contracts are so well known that a simple illustration will suffice. I decide to build a house. A contractor assumes the task. He then proceeds to make sub-contracts with the purveyors of lumber, bricks, and other materials to the effect that these materials shall be delivered to him at a certain future time and at a certain price. The main contractor has thus contracted himself out of risk with reference to price changes in these materials.

Our contractor has thus been relieved of much of his risk.

The foregoing illustration is typical. A man agrees to do a certain thing. He then contracts himself out of certain phases of the risk involved. True, the burden is merely transferred to someone else, but presumably this someone else is a specialist, and therein is the social defense.[1]

In the building industry and in some lines of manufacturing, it is practicable to pass on in this way the risk of price changes in nearly all the important cost items except labor; this latter risk the manager must ordinarily himself assume if he contracts in advance to sell his product at a given price. During the war, however, it was not uncommon for building contractors to rid themselves of this risk by stipulations that the contract price should be readjusted in case changes in wage rates should occur before the completion of the job.

In many lines of commercial and manufacturing enterprise, risks can be passed on by coupling advance sales with advance purchases; in other lines, the risks must be assumed but can be kept at a minimum by keeping inventories and advance orders low. Quick turnovers give relatively little chance for profit or loss from price changes.

It is usually the case, however, that at some point in the chain of successive buyers and sellers the possibility of contracting out or coupling purchases and sales disappears. Someone must assume the risks; the fact that the one who assumes them is a specialist means that he has superior facilities for judging the situation, if a basis for judgment exists, but it also means, as a rule, that he does not secure a good distribution of risks.

QUESTIONS

1. Does insurance reduce risks or does it transfer risks from the individual to society?
2. Should a state carry insurance on its buildings?

[1] Adapted by permission from L. C. Marshall, *Industrial Society*, pp. 501–2.

3. B, a dealer, has 500 automobiles in stock. Should he insure them?
4. Give some examples of cases when it is cheaper to run risks than to avoid them.
5. Should the amount of the insurance carried on buildings depend on their cost or on present cost of replacing them?
6. C is supported by the income from his wife's property and does not work. Should his life be insured? Should his wife's life be insured in his favor?

CHAPTER V

UNCERTAINTY AND THE BUSINESS CYCLE

One direct result of the presence of uncertainty in economic affairs is of such general interest and is so fundamental to an understanding of the working of a competitive business organization as to require more careful study than we have found it necessary to give to most aspects of the risk problem. This is the tendency of production in certain lines to exhibit a fairly regular alternation of excessive activity and stagnation. Maladjustment of production and consumption we should expect to find as a result of the presence of uncertainty in the calculations of producers, but the presence of a rhythm of overproduction and underproduction as a result of this uncertainty requires special explanation.

In the following pages will be presented, first, a description of the phases of the business cycle as they have typically shown themselves in recent years, and second, a discussion of the causes of the phenomena described, with particular reference to the extent to which the cause is found in the existence of business risk.

The stages of the typical business cycle are generally considered to be four: depression, improvement, prosperity, liquidation. Although it is sometimes impossible to state accurately the time at which one of these stages merges into the following one, the classification is convenient and we shall utilize it in describing the phenomena of the cycle. Let us start our description with a period of depression, such as existed in the United States in 1894, in 1908, and in 1921.

Depression is characterized by low production, low prices, and low profits.—The most conspicuous fact about the whole industrial and commercial organization, as it appears at such a time, is its amazing inefficiency. It is like a well-oiled machine stuck on a "dead center." Mills stand idle, mines are closed, freight cars are empty, and fleets rot at the wharves. The falling off in the volume of physical production runs in some industries to 50 or 60 per cent, while many individual firms completely suspend operations. Different lines of business are very differently affected, however. At the one extreme, among the major industries, stands agriculture, in which the volume of production

is usually not reduced at all. Individual farm products have their own cycle of overproduction and underproduction, but these rarely correspond to the cycle of general business.[1] Bakeries, ice plants, distributors of fresh milk, and other producers of perishables experience a very slight falling off in their volume of business. On the other hand, dealers in canned foods and preserved meats, flour-millers, and most producers of staple non-perishable goods experience a drastic reduction in the demand for their products. Bituminous coal production is curtailed much more than anthracite. Production of pig iron, copper, zinc, and other industrial metals is greatly reduced. The building industry is likely to be greatly curtailed in its operations in the early stages of a depression, but residence and public construction pick up rapidly, encouraged by the lower costs of materials and labor which characterize such a period. Trade, as a rule, is reduced less than manufacture and retail trade less than wholesale. Prices are low; prices of raw materials lower than those of half-finished products, and those of finished goods relatively the highest.

The volume of unemployment reaches its maximum, as a rule, about the middle of a depression, though generally the decline in wages lags considerably behind the decline in the volume of business and does not proceed as far. The efficiency of labor is high for three reasons: first, because the cutting down of industrial forces has taken the form of a weeding out of the least efficient; second, because the fear of unemployment is a great stimulus to the efficiency of those who remain upon the pay-roll; and third, because many laborers who are on the border line between two grades of skill get into the more skilled class in periods of business activity and drop back into the less-skilled class when business is dull, thereby increasing the average efficiency of both groups. Strikes are not numerous, though some of the most destructive have occurred at just such periods.

The decrease in the volume of trade and manufacture is reflected in the reports of business done by the banks. Bank statements indicate a position of great strength, loans and deposits being low and reserve ratios high, but the strength is not as great as it appears, for the proportion of uncollectible paper held is at a maximum.

Profits in most lines of business are decreased more than is gross income. Commercial failures are numerous, especially in the earlier part of the depression. Interest rates are low.

[1] For illustrations see Warren, *Farm Management*, pp. 83–90, quoted below, pp. 76–78.

Recovery may be either gradual or sudden.—The transition from depression to prosperity is typically very gradual, at least in the earlier stages of improvement, but occasionally it is startlingly sudden. When the latter condition prevails, the recovery will invariably be found to have been started by some exceptional circumstance, such as the combination of good crops in this country with short crops abroad which stimulated business in 1879, or the rush of war orders which banished depression early in 1915. If no such favorable incident occurs, the depression itself gradually engenders conditions which make for recovery, but the recovery in these cases is slow and does not affect the whole business world at the same time. Some industries are gaining ground while others are still going backward, so that it is impossible to recognize the turning point until it has been passed.

Increase of production usually starts at points where it has been curtailed most sharply on account of excessive stocks which have been carried over from the preceding period of prosperity. Production has been curtailed below even the low rate of consumption which prevails during the depression, and as a result the excess is worked off. Then new stocks of goods must be produced to satisfy the demand. Changes in fashion and the appearance of new kinds of consumption goods also sooner or later stimulate increase of production. Most important of all, in several cases, has been the revival of building and of railway and public utility construction. Investments of this character are made with a view to the distant future, hence the immediate prospect of dull business may be offset by the relative cheapness of materials and labor, whereas producers of goods for early consumption must be governed more by the outlook for markets in the near future than by considerations of economy in the costs of production.

Once the increase in business activity gets under way it is likely to radiate with increasing rapidity. If building industry expands, brick, cement, and lumber interests feel the effects at once; steel, copper, and transportation, a little later. Each of these passes its growing prosperity to others. Later still, retail buying shows some effect of the increased volume of employment. No single enterprise is self-sufficient; each is influenced by the fortunes of its customers and of those from whom it buys.

The effects of the increase of production on the labor market and the money market are obvious. Unemployment decreases, and wages

rise, at first more rapidly than the cost of living, then as prosperity develops tend to lag behind until the eve of a crisis, when they begin again to run ahead. Bank loans increase, but interest rates are slow to follow other prices upward. Banking is one of the businesses where an increase in customers' demand, coming in slack times, can be taken care of with the least additional expense, hence competition prevents any material advance in rates until the revival has run a long way.

An increase in business activity does not necessarily carry with it an immediate advance in most prices. The raw material markets are very sensitive because they are as a rule "buyers' markets." There is very little organization in them to restrict production and control prices, consequently prices go very low during depression, and the resumption of competitive buying quickly puts them up. The case of most manufactured goods is different. Their prices have usually been maintained during the dull period to some extent by curtailment of output, and manufacturers come into the revival period with idle plant capacity, which makes it possible for them to handle the increased volume of business with less than proportionate increase in expenditures. Hence competition is apt to be keen until the expansion of business has proceeded to the point where existing plants are booked ahead to capacity, and prices show relatively little tendency to advance. The advances in prices of raw materials and wages go far to offset the decrease in overhead costs which results from greater volume of business, so that the early stages of recovery do not bring large profits to manufacturers, except where monopoly conditions are present.

After a time, however, in one industry after another the expansion of demand reaches the stage where manufacturers decide that it will pay to raise prices even at the risk of losing some orders, and when this process starts it is likely to gain momentum. An increase of prices at one point means an increase of costs at another, and coming in conjunction with an increase in orders and inquiries, it encourages price increases where it does not make them imperative.

At first, higher prices check demand, for buyers, both middlemen and consumers, are thinking in terms of a falling or stationary price level, and they resent and resist advances. But when increases become numerous enough to create an expectation of further increases, they begin stimulating, instead of retarding, purchases. Present purchases and contracts for future purchases are made in

anticipation of further advances, and speculators, middlemen, and consumers begin to accumulate larger stocks.

Prosperity tends to develop into excessive activity, which in turn causes a reaction. No sharp line can be drawn between the periods known as those of recovery and of prosperity, but it is possible to draw a fairly clear distinction between a wholesome type of prosperity and the overexpansion which often appears as a result of prosperity and brings it to a close. For prosperity never passes into crisis without an intermediate period of false good times when the industrial machine, though apparently running at high speed, is really failing to maintain its efficiency as an organization for the satisfaction of human needs, and is sowing seeds of disaster for those who are directing its course.

If there were some way by which the progress of the "boom" could be checked at the point where production reaches the largest volume that existing resources make practicable, the real welfare of the nation would be greatly enhanced. When all the available labor is employed, when our capital resources have been adjusted to keep that labor force employed, and when the production of luxuries has expanded to provide for a standard of living corresponding to the enlarged income of society, the real improvement has reached its limit. No further expansion can put more buying power into one person's pocket except by taking out of another's.

But unfortunately there is no force operating to check the boom at this time, and there are forces operating to drive it further. Of these, the most important is the anticipation of a further rise in prices. The higher prices go, and the longer the time during which they have been advancing, the greater becomes the number of people who feel sure that the next change will be another advance, and this conviction gives rise to an epoch of speculative buying. The housewife buys a dozen cans of food where ordinarily she would buy three, the retailer loads his shelves, and the manufacturer lays in an extra stock of raw materials. Speculators withdraw stocks of goods from the market.

The effect of these withdrawals of goods from consumption is to create temporarily the same situation which would appear permanently if a large part of our current production of wealth were withdrawn and sunk in the sea. The consumable product shrinks relatively to the amount of social energy expended in a production, and hence the cost of living outruns the advance in individual incomes. It must do so. Individuals may succeed in obtaining such rapid advances of wages or profits as will offset for them the advance in

living costs, but the group, as a whole, cannot do so if a large part of its current product is being withdrawn from use in anticipation of an increase in its price.

At the same time, the current product itself is being reduced by the operation of forces inherent in the nature of prosperity. The pressure of competition brings with it an accumulation of wastes. Equipment is kept in operation which might better, as a long-run policy, be sent to the repair-shop or the junk heap. Managers harassed by customers demanding prompt deliveries neglect details of economy. Imperfect goods are shipped to customers on the theory that time is more important than quality, and customers accept inferior goods rather than risk getting none at all. The efficiency of labor declines, and labor absenteeism increases. Strikes multiply, and insubordination manifests itself. At the same time, interest rates rise, and if the expansion of business is very marked, transportation facilities prove inadequate.

All these difficulties accentuate the difficulty of making individual incomes and expenditures balance. The boom is no longer adding to the real welfare of the nation. It is subtracting from the total produced at the same time that it is inducing individuals to store up part of the product for future consumption, usually for consumption at a time when it will be less acutely needed than it is at the time it goes into hiding.

The transition from prosperity to depression is the shortest stage of the cycle, but has attracted more attention than has any other stage, on account of the spectacular character which it often displays and the disastrous consequences which it entails. According to the severity of its symptoms, this stage is variously denominated a period of retrogression, of liquidation, of crisis, or of panic. The outstanding characteristics of the period are pessimism, conservatism, and caution. Instead of reaching out for larger worlds to conquer, the captains of industry seek to guard their frontiers.

In brief, liquidation consists of two processes: first, the liquidation of stocks of goods and securities, by selling them or using them up without buying or producing an equal quantity to replace them; and second, the liquidation of credit, by collecting notes and accounts without extending credits in equal amount to replace them. If the process were carried through to completion, all business men at the end of the period would have their net working capital in cash, with no inventories or accounts; banks would have no loans outstanding;

and all stocks and bonds would be in the hands of permanent investors.

Of course, in practice nothing remotely approaching this actually happens. Individuals liquidate their holdings of raw materials, finished goods, and securities, but only by transferring them to others who are under less pressure. The total of bank loans is but slightly reduced in the most drastic period of liquidation. What occurs is a season of testing by which the stronger firms gain at the expense of the weaker. One bank may turn its loans into cash, but only on condition that other banks stand ready to rediscount them or to loan the funds to those who are pressed for payment; one speculator may liquidate his holdings of stocks or of goods on condition that others can secure the funds to take the load off his shoulders.

In a period of expansion, such as was described above, the culmination of prosperity and the beginning of a downward trend may take the form of pressure for liquidation in either the commodity, the security, or the short-time credit market. In 1907, for instance, it was pressure for credit beyond the capacity of banks to supply it which precipitated the effort to liquidate by dumping goods on the market and slackening production; in 1920 it was the overexpanded stocks of certain commodities, notably silk and sugar, which led to the demand for liquidation of loans; in 1903 the center of strain was in the security market. In either case, the liquidation movement when once started gains momentum of itself.

In the commodity markets, a relatively small amount of forced selling, which may be brought about either by apprehension concerning the market for the goods so sold or on account of tension at some other point, exerts a depressing influence on prices and creates an apprehension of further selling. Holders who are under no real pressure market their goods as soon as they become apprehensive, make advance sales to profit by the prospective decline, or curtail purchases and use up the stocks they have on hand. This depresses prices further, and the fall of prices creates financial embarrassment, for goods are a basis of credit, and on a falling market curtailment of credit is imperative. The financial embarrassments necessitate further distressed selling, and so the downward spiral proceeds.

To avoid complete demoralization, there must be provided some organization to check the violence of liquidation and maintain prices. This organization can be most effectively furnished by the banks, particularly if, as in this country in 1920 and in England at earlier

times of crisis, they are well enough organized to resist the temptation to try to force liquidation ahead of one another. Credit extensions are arranged, and funds are provided to withhold sufficient goods from the market to hold prices up as far as seems feasible. If the banks are unable to do this, if each strives to protect itself by selling its securities, withdrawing its balances from other institutions, and pressing its debtors for settlement, crisis passes into panic. But if organization is successful in averting the peril, the period is characterized by "orderly liquidation." Prices of raw materials decline; production is curtailed in order to apply receipts to payment of pressing obligations and also to avoid losses from further price declines; the weakest firms pass into bankruptcy, and the next weakest submit to "voluntary reorganization" which transfers control to their principal creditors; but there is no panic and no sudden collapse of the market for basic commodities.

A similar process of liquidation takes place in the stock market, where indeed it usually begins some months earlier than in the commodity market. Even more than is the case in the market for raw materials and manufactured products, the stock market is financed on borrowed funds. Hence it is subject to exactly the same sort of pressure which we have described in connection with the commodity markets. A decline in prices, however caused, precipitates distressed selling by borrowers to protect their loans; this depresses prices further; buying is deterred and speculative selling encouraged by the decline, and this still further weakens the security pledged for loans. The process is more rapid than in other markets, because the proportion of credit is higher and because lenders on stock-market collateral do not feel, as a rule, the same obligation to try to protect their debtors as do trade creditors and banks loaning to business men on the security of inventories and accounts. Here also, as in the commodity market, the situation has been saved again and again by the intervention of the stronger banks. By buying in large blocks, by extending credit to finance buying by others, and by mutual agreement to refrain from forcing liquidation by holders of large blocks of stock, panic is prevented.

Such are the major features of the liquidation process; other features of the period of retrogression need scant notice only. Railroad gross earnings remain large at first, because commitments already entered into are carried out, and because the liquidation process itself gives rise to a considerable volume of trade. Later they decline

violently and persistently. Total bank transactions decrease; business failures increase to from three to six times their former number, and dividend payments are curtailed in many instances. Strikes continue numerous; wages decline slowly; unemployment increases; and the cost of living declines slightly.

The liquidation period in the nature of the case cannot continue long. When it has run its course, however, production does not at once resume its previous trend. Partly on account of the existence of excess stocks accumulated during the period of rising prices; partly on account of the loss of general confidence in the solvency of debtors; partly on account of the fear of further declines in prices; partly because of a curtailment of consumer demand on account of unemployment and business losses, a period of dulness is nearly sure to follow. This is the stage with which our description began, and with this stage it may close. We must now turn our attention to the underlying causes of the phenomenon, and particularly to the way in which it illustrates the disturbing influence of uncertainty in a society organized on the assumption that individual business managers may be expected to find and follow the lines of policy which in the long run are most profitable to themselves and to the society of which they are a part.

It is not our purpose to review the numerous theories which have been advanced to account for the rhythm of business, theories ranging from the dominance of the profit incentive to the form of the banking system, from the fluctuation of the rainfall to the exploitation of labor.[1] Superficially there appears to be a wide disagreement among students of economic theory as to the basic causes of the phenomena of the cycle, but most of the differences resolve themselves into differences of emphasis upon factors which are in no way incompatible with one another. Fundamentally, all the theories which seem worthy of extended consideration are variations of two points of view.[2] One group emphasizes the tendency for the supply of certain types of goods to get out of adjustment with the demand for them. The realization of an undersupply, for instance, causes a burst of production which continues till an excess of supply becomes evident, and this situation in turn causes a slackening of activity which continues

[1] Leading theories are summarized in Mitchell, *Business Cycles*, pp. 3–19, and in Hansen, *Cycles of Prosperity and Depression in the United States, Great Britain and Germany*, pp. 81–96.

[2] In this classification the author has followed in part the analysis in Hansen, *op. cit.*

till the surplus is changed into a deficit. The other group finds the basic cause of the cycle in the financial structure of society, including under that term: money, credit, prices, and the profit motive.[1]

In the judgment of the writer, the ultimate causes of the cyclical movement of business are found in the factors discussed by the writers of the first group. The arguments they have presented however have not been thoroughly convincing because each writer has discussed the operation of the same tendency in the case of a different group of phenomena, leaving the impression that in the behavior of that particular group is to be found the entire explanation of the cycle instead of merely an illustration of the way in which a general tendency works in a wider field.

The common element which runs through all the theories of this group is the emphasis on the element of *uncertainty*, chiefly uncertainty on the part of producers and middlemen concerning the conditions that will prevail in the market when they are ready to dispose of their goods.

This uncertainty characterizes all modern industry, in contrast to earlier forms of economic organization, for two principal reasons, namely, the length of time involved in the capitalistic process, and the durability of most finished goods, which permits alternate accumulation and liquidation of stocks and thereby increases the difficulty of predicting the demand at any given time. It was noted in chapter i that the uncertainty arising from the length of time involved in production and from the dependence of producers on markets causes irregularity and consequent risk; the way in which it results in a *rhythm* may be explained as follows:

In any specialized economic organization, there must be some way of directing the specialists in order that each commodity and each service may be produced in the proper proportion to the others, proper, that is, in the sense that social energy is devoted to the production of any commodity only up to the point where additional units of it are less useful (by some scheme of measurement), at least are less desired by those whose desires are most effective, than additional units of some other product to which the same productive energy might be applied instead. In our own organization, the principal devices for securing a balanced output are prices and advance

[1] Typical of the first group are the theories of Hull, Robertson, J. M. Clark Warren, and England. The second point of view is represented by Mitchell, Veblen, Fisher, and Hansen.

orders. A falling off of orders or a lowering of market quotations gives warning to the manager that the rate of production should be slackened, and vice versa, an increase of orders or a rise in prices is a call from society for an increase of output. The price index is available to producers in nearly all lines, while advance orders are available to relatively few.

While this system works fairly well in most respects it has one serious defect. Prices and orders give information concerning the prospective state of demand compared with the known facts of present and future supply, but they give no clue to the changes in supply which they are themselves likely to cause. What a business man needs to know in order to plan production scientifically is not merely how many units of his product would be bought at a given price, but also how many other producers are reaching the same conclusion that he is reaching, from the same facts, and are making plans similar to his own. If the element of time in production could be eliminated, the price system would effect a smooth adjustment of supply to human need, so far as need can be expressed through offers of purchasing power, but time brings an ineradicable element of risk. For each producer needs to know precisely what it is impossible for all to know, namely, how many other producers are about to take advantage of the same demand that he individually is trying to take advantage of. If A's plans depend on B's plans and B's plans depend on A's plans, there is no escape from uncertainty except through an agreement of the rivals, or through the intervention of an outside control—in either case, monopoly.

One result of this situation is a tendency to alternations of over- and underproduction. Let us assume that at a given time there is evidence of demand in a given line sufficient to justify an increase in the rate of production. The first managers who adapt their plans to this situation are probably rewarded by increased profits. Under competition, however, the tendency is for an increasing number of persons to try to take advantage of the situation, each more or less in ignorance of the other's plans, and no force intervenes to check the continued increase of production till it reflects itself in declining orders and falling prices. By that time, however, investments have been made, contracts let, and operations started which will result in further augmentation of the supply. Time is required to check this increase in the volume of production, and during this time production outruns consumption unless consumption is stimulated by unprofitably

low prices. Moreover, just as was the case on the upswing, the indications that production is being overdone result in curtailment of operations by independent producers in ignorance of each other's intentions, and this tendency continues till output is decreased to a rate below that which is economically justified.

A second cause of the cycle, very similar to the first but quite independent of it, is the effect of uncertainty on the decisions of speculative buyers with regard to the accumulation and decrease of stocks. Throughout the industrial order, a large part of the transferable wealth, including raw materials, half-finished products, and goods ready for consumption, is in the hands of individuals who can, to a greater or less extent, adjust the size of their holdings to changing conditions, and who do as a matter of fact adjust them chiefly in accordance with their judgment of the probable course of prices. The most conspicuous illustration is the case of the simon-pure speculator, who stands ready to buy anything at any price if he thinks it will go higher, and to throw everything on the market if he believes the price is destined to reach lower levels. But it is not merely the speculator who behaves in this fashion. The manufacturer adjusts his purchases of raw materials and the extent to which he produces for stock to his judgment of the trend of prices; the middleman enlarges his holdings when he believes the next price change will be upward, and even the housewife buys fifty pounds of sugar instead of ten, if she believes that the price is a bargain, a bargain, that is, compared with the price that is likely to be charged her for the next order.

This would be of no consequence, so far as the cyclical tendency is concerned, if all these judgments of the trend of price were formed independently, for some would overbuy when others were underbuying. The net result would be a fairly steady rate of buying if the number of buyers was large, or an unpredictable irregularity if the number was small. But the judgments are not formed independently. They are all formed, in large part, on the basis of the same evidence, and of that evidence the most influential part is the trend of prices in the recent past. Whatever prices have been doing is accepted by a great many as the most likely thing for them to continue to do, so that the higher they go the more the tendency to speculative buying, and the lower they go the more the tendency to use up stocks and buy from hand to mouth.[1]

[1] Cf. Selden, "Trade Cycles and the Instinct of Anticipation," *Quarterly Journal of Economics*, XVI, 293–310.

The effect of this tendency to mass movements of buying and selling is greatly to accentuate the effect of the producers' uncertainty concerning one another's plans, to which reference was made in an earlier section of this chapter. For an increase in middlemen's stocks gives the producers *twice* a false index of the amount of production which is economically justifiable. When the increase in buying takes place it swells the volume of orders and creates a false appearance of expansion in the market, and whenever the excess stock is utilized it again gives a false indication, this time of contraction in the market.

The two tendencies, it will be noted, are of fundamentally similar character. Producers cannot know the future conditions of supply accurately if they operate in ignorance of each other's actions; hence the tendency is for all to act on much the same information and for their action to overshoot its intended effect alternately in opposite directions. Middlemen, speculators, consumers, likewise operate to a large extent in ignorance of one another's intentions and are likewise apt to act simultaneously on the same information, giving rise to alternations of abnormally large and abnormally small demand and increasing the extent of the uncertainty in the minds of producers.

In the following selections, two writers give illustrations of the working of the tendency to rhythm in widely different fields of production.

THE CYCLE IN PRODUCTION OF BASIC CAPITAL GOODS

Let us suppose that for any reason the exchange value of the products of any trade has risen. There will then be an inducement to increased investment in that trade. But the new instruments ordered will not be immediately ready for use: meanwhile the high level of price will continue, and since each producer (in a competitive régime) is ignorant of the preparations which are being made by his rivals to meet the high level of prices, the total amount of new instruments prepared will be so great that the price of the product eventually falls below its old level. . . . . The first drop in prices will occur as soon as the first batch of new instruments is brought into use: the longer therefore this period of gestation, the longer will the period of high prices continue, the greater will be the over-investment, and the more severe the subsequent depression.

For instance, the price of coal tends to reach both its maxima and minima later than that of pig-iron. While there are other causes for this, part of the explanation seems to lie in the longer period of gestation necessary in the coal trade. According to Mr. Hull it takes "practically a year" in America to build a new blast furnace. From an English ironmaster I gather the impression that in this country some fifteen months would be

required. But a coal mine which is begun to be sunk now will not be in working order for several years.[1]

THE CYCLE IN AGRICULTURAL PRODUCTION

Man is so constituted that he is too likely to think that present conditions are to continue. If we have a wet year or two, we think that it will always be wet; if good prices, these are to remain forever. In the case of prices, it is the very feeling of certainty that present conditions are to continue that makes it impossible for them to do so. One of the most important gifts for man to cultivate is his ability to forecast the future. This ability is one of the most valuable business assets.

The usual guide that is followed in determining what crops and animals to produce is the profits of the last year or two, but since prices may be temporarily high or low, longer periods should be considered. Many factors are involved. The yields in the community may be good in a year of poor crops, or the community may have poor crops in a year of general overproduction and low prices. Add to these uncertainties the fact that the weather has nearly as much to do with the total crop as the acreage, and it is no wonder that the farmer finds it difficult to tell what acreage to plant. With the annual crops, the acreage is kept fairly close to the country's needs. The longer the time required to grow a product, the worse the periods of over- and underproduction become. A shortage of an annual crop may be made up in a year, but it takes ten to twenty years to adjust the area of apples and fifty to a hundred years to grow a lumber crop to supply a shortage in lumber.

Apples in the Northeastern States are a good crop with which to illustrate this point. If the supply of apples is short, prices will be high. If this condition continues for a few years, planting will be encouraged, but the trees planted will have no effect on the next year's crop. Prices may go still higher and so stimulate more planting. This condition may continue for twenty years, after which comes the deluge of apples, with more trees coming on every year. This is what happened during the past generation. Apples paid well from 1854 to 1864. From 1864 to 1874 prices were very high. They continued fairly good till 1878. They then dropped and continued to drop till 1896, when thousands of bushels were not picked. Since 1896, prices have been rising, and for the last few years they are again so high that people are becoming wild about them.

Nearly all the bearing apple orchards in New York were planted between 1855 and 1878; planting then practically stopped. It has been much overdone. In the early nineties some orchards were cut down.

In one township in Monroe County, New York, which is in the center of the apple belt, 57 per cent of the apple trees were planted from 1859 to

[1] D. H. Robertson, *A Study of Industrial Production*, pp. 13–14.

1878; only 11 per cent were planted from 1879 to 1903; while 21 per cent were planted from 1904 to 1908. . . . .

From the figures thus far available, it appears that the periods of over- and underproduction of apples last about twenty to twenty-five years, as it takes this time to get enough trees raised to bearing age to cause overproduction, and about another equal period of little planting before prices rise high enough to stimulate another planting wave. It would appear to be the part of wisdom for a farmer to start planting or buying orchards about the middle of the low-price period when everyone is discouraged, and to stop planting at the time when prices are so high that everyone is planting. Some farmers do follow this practice. The farmer who planted in the eighties has already been rewarded. . . . .

Hogs usually rise in price for two to three years and then drop for two to three years. A very abnormal corn crop shifts the hog curve. Since 1866 the curve has been very regular until 1901, when the very short corn crop checked hog production, so that the drop in hog prices did not come until two years later. It takes about two to three years of low prices to check hog production and get rid of the extra pigs that are coming on, and about two to three years to get production started and the pigs raised to marketable age so as to again cause overproduction. If a farmer in the corn-belt changes his production on account of prices, it would appear to be good policy to raise a considerable number of pigs in the second or third year of low prices, and to be cautious about the number raised in the second and third years of high prices. When the majority are disgusted with the business is a good time to buy; when the majority are declaring that prices will never again be low is a good time to sell. . . . .

Prices of horses show the same cycle, but it takes a long time to grow enough colts to overstock the market, apparently eight to ten years. Those who were first to start raising colts after the ruinous prices of 1896 made a good profit. When the price of horses drops very low, it would appear to be the part of wisdom to sell all the old horses and buy young ones that will still be living when prices rise.[1]

It will be noted that the fundamental reasons given by Warren for the fluctuation of the price of farm products is the same as that given by Robertson for the fluctuation of volume of the production of coal. In each case, the essential thing is the point to which reference was made above—the impossibility of eliminating the uncertainty which arises under conditions of competition, from one competitor's ignorance of what other competitors are going to do. As Warren notes, "It would appear to be good policy to raise a considerable number of pigs in the second or third year of low prices" and "to start

[1] G. F. Warren, *Farm Management*, pp. 83–90. Copyrighted, The Macmillan Company. Reprinted by permission.

planting or buying orchards when everyone is discouraged." This is very good advice for the individual farmer, but it does not solve the social difficulty, for if everybody starts planting when everybody is discouraged, it is evident that nobody is really discouraged, and the result of a universally efficient attempt to concentrate production in the second or third year of low prices would be to insure a still further descent of prices. For the present it does not appear likely that such advice will be so universally accepted as to make its acceptance disastrous, but it is easy to see that the efficiency of such instruction depends on its own inefficiency. The problem is very much like that of spreading the Christmas trade. To induce people to do their Christmas shopping early is to confer a mutual benefit on the shoppers, the clerks, and the retailers, but if a prophet should arise to preach the gospel of early shopping with such fervor that everybody tried to do his Christmas shopping in the first week of November, the results would be disastrous. The prophet's social value depends on the limitations of his own prophetic efficiency.

In the case of the agricultural operations discussed by Warren, the cycle is a special cycle in the individual industry. In any line of competitive production where there is a large time element involved in the adjustment of the rate of production, this cyclical tendency shows itself. With regard to a large class of commodities, however, the conditions of production in one field have a direct bearing on the prosperity of producers in another field, so that the tendency is for the ups and downs of many of our most important branches of production to run together, giving rise to the phenomenon known as the business cycle. Transportation, manufacture of steel and copper, and of building materials, the production of luxuries for laborers' consumption, the fuel industries, all are bound up very closely with one another. Financial institutions, such as banks, brokerage houses, and insurance companies find their prosperity directly dependent upon the activity of business in other important lines. In fact, outside the field of agriculture, a superficial examination of the facts leads to the conclusion that prosperity and depression are phenomena characteristic of the entire business community rather than of individual trades. And even in agriculture, some influence of the business cycle is clearly to be seen, though it is often overshadowed by the influence of other conditions. There are however numerous industries which are almost immune from the cyclical tendency.

The following selection furnishes a more detailed analysis of the operation of the tendency to rhythm in the errors made both by producers of basic goods and by middlemen in the accumulation and liquidation of stocks:

Every producer of things to be sold to producers has two demands to meet. He must maintain the industrial equipment already in use and the stocks of materials and goods on their way to the final consumer, and he must also furnish any new equipment that is wanted for new construction, enlargements, or betterments, and any increase in the stocks of materials and unsold goods. Both these demands come ultimately from the consumer, but they follow different laws. The demand for maintenance and replacement of existing capital varies with the amount of the demand for finished products, while the demand for new construction or enlargement of stocks depends upon whether or not the sales of the finished product are growing. Normally, over a long period of years, there is a certain demand for new construction on which producers can rely, and hence the demand for new construction is a normal part of any demand schedule for this kind of goods. But it does not come regularly. . . . .

The demand for a certain product, let us say, begins to increase steadily, each year seeing an increment equal to 10 per cent of the original demand. At the end of five years the increase stops and the demand remains stationary. If the productive equipment has kept pace with the need, it is now enlarged by 50 per cent and calls for 50 per cent more expenditure for maintenance and replacements. Meanwhile there has been an added demand for new construction equal in five years to half the entire original equipment. If renewals are at the rate of 5 per cent a year, the first effect of an increase in demand at the rate of 10 per cent in a year is to treble the demand for the means of production, since a demand for new construction has arisen twice as large as the previous demand for maintenance.

What happens at the end of the five years when the demand stops growing? By this time the requirements for maintenance are 50 per cent greater than they were while new construction has been going on at a rate equal to twice the original maintenance account. The total output has grown to three and one-half times its former volume. But the demand for new construction now ceases abruptly. This means that if the producers engaged in construction work had enough capacity to meet the demand of the fifth year the sixth year would see them running with four-sevenths of their capacity idle.

Thus the law of demand for intermediate products states that the demand depends not only on the demand for the final product, but on the manner in which that demand is fluctuating. Making all due allowances for mitigating factors in translating the illustration back into real life, it is

still difficult to see how the building and machine-making industries can possibly avoid the disagreeable experience of outgrowing themselves in time of prosperity. For demand can never be expected to grow at an absolutely steady rate, and the slightest fluctuation seems destined to put the producer of capital goods in a situation comparable to that of a passenger forcibly carried by his station.

This principle may be illustrated by a town which grows rapidly up to the size at which its industrial advantages are fully utilized and beyond which its normal production can expand but slowly. When the point of transition is reached from rapid to slow expansion, the town may find that it has outgrown itself by the number of people engaged in the extra construction work involved in the process of growing. Houses to take them in, stores to feed and clothe them, trucks to haul the materials they work with, offices, etc., all will be demanded, and thus a boom may be created which is none the less temporary for being based on tangible economic needs.

The chief reasons for keeping a stock are, first, to give the customer a wide selection of goods which he can actually inspect and, secondly, to give assurance of being able to fill large orders without delay. What is the effect of expanding demand on the amount of stock needed to fulfil these functions? Obviously, the larger the orders, the greater the danger of being sold out, unless the stock is increased in a corresponding proportion, or something not too far short of it. The increase in demand would not seem to make it necessary to keep any wider range of goods in stock. But if we are thinking, not of what is necessary, but of what is profitable, we have a different situation. Some goods which were just below the line of toleration will become profitable to handle on the basis of the increased rate at which they can be sold, and the natural result is the carrying of a greater variety of goods as well as the more goods of each kind.

If the dealer is in doubt whether or not to keep a certain line in stock at all, a brisk state of demand will be likely to decide him to keep it. . . . .

One other fact which may make merchants more willing to invest in considerable stocks is that a time of growing demand for some one commodity, or a time of general increase in activity, are both times of rising prices for the intermediate products called for in the business affected. This makes these commodities a profitable investment so long as credit can be had on easy terms with which to enlarge one's holdings.

Taking all these things into consideration, one is justified in concluding that an increase in demand naturally tends toward an increased investment in dealers' stocks, which is, if anything, more than in proportion to the increase in sales, unless limited by: (1) difficulty in getting added credit to carry the extra "working capital," (2) an extremely sharp rise in supply prices, (3) the fear that the prosperity is temporary, or (4) the inability of manufacturers to make deliveries.

So far we have considered only one big division of the process. If we imagine the effect of all this on those industries which produce the tools and machinery used in the construction industry itself, we have a further possibility of multiplying the effects of a change in demand. In fact, the possibilities multiply with every step backward, for every industry which produces the means of production for some other industry has its own demand for its own tools and machinery to be filled. These possibilities of intensification are soon mitigated, however, by the fact that as we get farther and farther back we reach industries which produce machinery and tools for a large number of other industries at once, so that they register the effect of the average of a great many changes in a great many particular lines of production. Thus we finally reach the steel industry, which produces the chief of all the raw materials used in making capital goods. This industry is so large that a change in the demand for any comparatively unimportant product, however much it may be intensified in the way we have just studied, has no appreciable effect on the great mass of steel production of the country. Only the largest industries buy enough steel to have a decided effect on the demand for this basic material. Railroading, which itself is to a very large extent engaged in the production of intermediate products, furnishes the steel industry with an outlet for its products which is so large as to be quite decisive and at the same time so fluctuating as to be a constant barometer of prosperity or of depression. And the steel industry itself is an equally important barometer, reporting in intensified form all general movements which originate with businesses closer to the final sale of the product.

In summary, the main principles contended for are as follows:

1. The demand for enlarging the means of production (including stocks of finished goods on the way to the consumer) varies, not with the volume of the demand for the finished product, but rather with the acceleration of that demand, allowance being made for the fact that the equipment cannot be adjusted as rapidly as demand changes, and so may be unusually scarce or redundant to start with in any given period. The demand for equipment may decrease as a result of this law even though the demand for the finished product is still growing.

2. The total demand for producers' goods tends to vary more sharply than the demand for finished products, the intensification being in proportion to the average life of the goods in question.

3. The maximum and minimum points in the demand for producers' goods tend to precede the maximum and minimum points in the demand for the finished products, the effect being that the change may appear to precede its own cause.[1]

[1] Adapted by permission from J. M. Clark, "Business Acceleration and the Law of Demand," *Journal of Political Economy*, XXV (March, 1917), 217–35.

The principles explained in the preceding pages seem to be the basic causes of the business cycle; basic in the sense that they are adequate to account for a cycle without the presence of other factors, such as a particular monetary, credit, or profit-making system, to co-operate with them. On the other hand, given a cycle of production caused by the operation of the factor of uncertainty in the way just outlined, fluctuations in the level of profits, in the rates of interest, and in the stock of money must inevitably follow, and must in turn profoundly modify the problem of managing production. As was indicated in the earlier portions of this chapter, credit operates to exaggerate the violence of liquidation, or to check it, according as the principal creditors are well or ill organized. High prices, lagging wages, and lagging interest rates increase the level of profits and stimulate further increases in productive activity. But it is easy to exaggerate the influence of profit margins. Business men are willing to operate on a narrow margin of profit if the margin is sure, or reasonably probable, and an increased volume of orders, whether due to speculative accumulation or to pressure of actual consumers' demand, even when the level of costs and prices is such as to make profits narrow and uncertain, operates to stimulate a quick expansion of output. Profit margins seem to result from, rather than to cause, the major changes in business activity.

We may summarize the conclusions of this chapter as follows: The cycle is not merely a phenomenon of *finance*. The conditions of uncertainty under which *production* is carried on at the present time tend to create a rhythm of over- and underproduction in the case of many important industries. The fluctuation is more violent in the case of producers' goods, because the cycle itself creates fluctuations in the demand for them which accentuate the fluctuations due to the alternate over- and underestimates of probable supply. The character of the cycle varies widely from one industry to another. Its character is influenced chiefly by the following considerations:

1. *The length of time required to adjust the rate of production to the state of demand.* When production requires little antecedent preparation the cyclical tendency is at a minimum.

2. *The extent to which production is governed by factors outside the control of managers.*

3. *The number of independent producers.* In general, the larger the number of competing producers, the greater the difficulty in getting

information which will prevent the maladjustments which result in a cycle.

4. *The extent to which it is possible to store up the product for future needs.* The more readily the product is accumulated, the greater the tendency to variation in the demand.

5. *The extent to which the particular line of production is independent of other lines in its activity.*

QUESTIONS

1. Describe the conditions prevailing in a typical period of prosperity; of depression.
2. Analyze the current business situation with a view to determining (*a*) what is the present phase of the cycle; (*b*) to what extent the present situation corresponds to that described as typical of this stage.
3. What is meant by liquidation of credits? liquidation of inventories? Are the two processes sufficiently similar to justify our calling them by the same name?
4. Is liquidation of one of these two types (question 3) likely to cause liquidation of the other type? Is the process more likely to proceed in one direction than in the other?
5. In heating a house by the use of an oil burner controlled by a thermostat, alternations of overheating and underheating occur, which are more marked if a hot-water heating system is used than with a hot-air system. Show how this difference illustrates a tendency operative in causing greater cyclical fluctuations in some types of business activity than in others.
6. How do the following factors determine the extent to which a given line of business is affected by the cyclical tendency? (*a*) the extent to which production is governed by factors outside the control of managers; (*b*) the extent to which the particular line is independent of other lines?
7. Which class of commodities have the more violent fluctuations in price, perishables or durable commodities? (Consider, first, fluctuations in price connected with the business cycle, and second, fluctuations due to maladjustments in the industry itself, due to non-cyclical causes.)

CHAPTER VI

BUSINESS FORECASTING

Broadly interpreted, the term "business forecasting" might include practically the whole range of activities which aim at the elimination of business risk by the reduction of uncertainty. As was indicated in chapter iii, the range of methods used in business research is so great, and the problems are so much a part of the technique of individual lines of business, that it is not practicable in a general work of this character to examine them in detail. One phase of the development of business research, however, touches so wide a range of enterprises and promises to be of so great importance for business in general that it may properly be given fairly detailed consideration. This is the technique of forecasting the coming and going of prosperity and depression, which is generally referred to as "business forecasting" in the narrower and more specific use of the term. The present chapter deals with forecasting in this narrower sense.

During the last ten years there has been a great increase of interest in the problem of predicting the course of the business cycle, partly because the changes in business activity and in the level of prices have been of unusual magnitude and suddenness, and partly because the advance of economic science has made it possible to speak with more confidence concerning the main outlines of a technique of forecasting. The pioneers in the development of business forecasting were the commercial business service agencies, particularly the Babson Statistical Service and the Brookmire Economic Service. Within the past ten years, the problem has been attacked vigorously by academic students, notably by Professor Wesley C. Mitchell in his study of *Business Cycles*, more recently through detailed statistical studies by Professor Warren M. Persons and by the staff of the Harvard Economic Service. Commercial barometers, moreover, have multiplied, and financial and business periodicals have come to devote much space to analyses of the trend of business activity.

Complete analysis of the causes which are making for change in the business situation would be by far the most satisfactory method of forecasting if it were practicable.—Such an analysis, however, is wholly impossible. By this is meant not merely that a mathematically com-

plete and exhaustive survey of all the facts necessary to such an analysis is impossible, but that even such an approximation as will serve the practical needs of business involves difficulties so great that at no time will the conclusions of competent students arrived at independently in this way be unlikely to be in substantial disagreement. Such an analysis would require a survey of the extent of existing stocks of goods held by producers, by middlemen, and by consumers, of the rates at which production and consumption were adding to, or subtracting from, these stocks, and of the ideas men held as to the desirability of increasing or decreasing these stocks or changing these rates of consumption and production. It would require also a more accurate knowledge than anyone can hope to attain of the future course of politics and of legislation, of the future of the weather and the consequent yield of leading crops, of the elasticity of consumers' demand, of the tendency of fashions and changes in tastes, and of other factors so numerous and so elusive as to defy accumulation and comparison of the necessary data.

A limited number of items may serve as an acceptable index of the general situation.—The overwhelming difficulties in the way of collecting the data necessary for a complete analysis of the business outlook at any given time may be overcome to a large extent by using the device known to statisticians as sampling. A limited number of items are chosen for careful study, and the remaining evidence is ignored on the theory that if the items chosen for study are really representative and are fairly numerous, no serious error is likely to result from treating the sample as though it were the whole body of evidence. This sample may be selected in either of two ways. The attempt may be made to pick out the most important *causes* of business changes, such as changes in crops, contraction and expansion of available supplies of credit, and taxation, keep close watch of them, and ignore the rest. Or, the course of past cycles may be studied to determine what statistical data have most faithfully reflected or predicted the course of prosperity and depression in the past, and a number of these items may be followed, the assumption being that the regularities which have shown themselves in the past may be expected to continue in the future, and that the use of a considerable number of indices will protect the observer against the danger of being misled by an accidental irregularity in the behavior of the items under consideration.

Thus in the attempt to develop a technique for forecasting the course of the business cycle, two methods have suggested themselves,

each of which is advocated in preference to the other by a considerable number of students of business. These methods may be designated as the method of *economic analysis* and the method of *statistical comparisons*. The method of economic analysis seeks to forecast the course of the cycle in exactly the same way that students of the social sciences generally try to forecast the course of events which are not cyclical in character. This method is simply to identify the forces which are making for contraction and those which are making for expansion in business, weigh the one set of factors against the other, and predict the course of events in the light of the relative strength of these opposing factors. No special attention to the cyclical character of the fluctuations in business activity is involved, except that the forces engendered by any given stage of prosperity which make for change are recognized along with other factors which originate elsewhere. This method emphasizes the factors which differentiate every situation from those which have preceded it.

The other method consists of a statistical study of the records of past cycles in the hope of establishing laws by which the course of a given cycle can be predicted by observing its progress and assuming that it will proceed as cycles have proceeded in the past. Advocates of this method urge that the regularities observed in the behavior of certain types of data are so great as to justify forecasters in assuming that these regularities will continue to show themselves in the future.

Fundamentally, this is the method of all statistical science; the question of its validity in connection with this particular problem hinges on the degree of regularity in the behavior of the items studied, the length of time, or better, the number of complete cycles, through which the asserted regularity of behavior has been traced, the absence of known causes which may reasonably be expected to alter the sequence of phenomena in the future, and the availability and accuracy of the necessary data. In the following sections, the leading barometric items are described, and their value for forecasting purposes is estimated.

Fluctuations in prices are generally considered to constitute the central phenomenon of the business cycle.[1]—Interest centers therefore on

[1] For a survey of the literature of the cycle in which this point is developed in detail, cf. J. H. Williams, "The Rôle of Prices in the Business Cycle," *Review of Economic Statistics*, I, 206–10.

attempts to forecast the course of prices rather than to use them to forecast other phenomena. Indices constructed by averaging large numbers of prices, however, have few irregular fluctuations, hence a definite change of trend usually is interpreted to forecast a considerable continued movement in the new direction. Prices may therefore be said without great inaccuracy to forecast their own movements.

To show the trend of prices, averages known as index numbers are compiled. Of these, the most widely used are Bradstreet's and the Bureau of Labor Statistics' indices. Bradstreet's index is obtained by simply adding together the prices per pound of ninety-six commodities. This index is published monthly. The Bureau of Labor Statistics' index is a carefully weighted average of over four hundred prices, each of which has been reduced to a percentage of the average price of the commodity for 1913. The Bureau of Labor index is much the more scientifically constructed of the two, but the difference in results obtained is not as great as the difference in methods of compilation would lead one to expect. Bradstreet's index tends to precede the Bureau of Labor index in both its upward and its downward turns, because it contains a larger proportion of prices of raw materials. For this reason, it is somewhat more useful as a barometer of general business conditions.

The volume of business done by the railways is a good barometer of general business conditions, though it tends rather to lag behind other indicators than to precede them. The figures generally used are those of railway gross earnings, idle cars, and car loadings. Of these, the *car loadings* are the most accurate and are also the earliest available. Unfortunately they are only available for the last few years.

Gross earnings are a good indication of the amount of business done, provided care is taken not to overlook the effects of changes in freight rates. For example, the very great increase in railway gross income in the early fall of 1920 was due to the increase in rates and not to any increase in the movement of goods, except the normal seasonal increase.

Railway earnings generally lag a month or two behind the course of general business on a downswing for the reason that goods which have been contracted for and goods which are drawn on the market under pressure to liquidate keep up the movement of freight during, and after, the crisis. After this movement has spent itself, the earnings fall off sharply. For instance. after the panic of 1907, which occurred in October the earnings of ten leading railroads remained

above normal until December, and were only 7 per cent below normal in January, but by July were 16 per cent below. Again in 1920 the decline of business activity was not reflected in the railroads' earnings until late in the fall, though prices reached their maximum in the spring.

Figures for net earnings of railroads receive a great deal of attention, partly because increasing prosperity of railroads is apt to result in increased purchases of equipment and construction materials, and the volume of the railroads purchases is so great that anything which stimulates or depresses their buying is a major cause of prosperity or depression in any other lines. Another reason for the interest in railroad net earnings is the extremely wide investment interests in their securities, and still another is the fact that changes in freight rates are forecast by the movement of railroad net earnings. Under the present law, it is the duty of the Interstate Commerce Commission to allow the railroads to collect such rates as will yield them a fair return (at present figured at $5\frac{1}{2}$ per cent) on the appraised value of their investment; hence a large increase in railroad net earnings creates hope of lower rates, and a decline in them dampens that hope.

Idle car figures are not very accurate, as the number of roads reporting varies and the figures are affected by activity in car-building and repairing cars, as well as by changes in the number actually used. In spite of these theoretical defects, the figures usually show much the same thing as the other transportation data, and no great risk is involved in using them if they happen to be more readily available than the more accurate indices.

Industrial corporation reports furnish little barometric assistance.— If accurate data were available at any time concerning the volume of business and the profit margins at which the leading business corporations of the country are doing business, the information would be of incalculable value in gauging the outlook for good or bad business. A clearing-house for the free exchange of such information with power to compel full and accurate statements would be of very great service to its members. The impossibility of securing such an interchange illustrates one of the disadvantages of a competitive system. Each firm has something to lose by imparting a full knowledge of its condition to its competitors, for even though it might gain much more than it would lose if it obtained full knowledge of their condition in the exchange, each would gain still more by securing the information from the others without making public the true facts concerning its

own condition, thus securing the benefit of the general publicity while protecting its own business secrets. This being the case, no firm is willing to be the first to abandon its policy of protecting business secrets and each would be suspicious of any other which offered to do so. The result is that business is done largely in ignorance of the extent to which competitors are piling up stocks of goods in anticipation of the same demand, accepting duplicate orders and planning expansions which conflict with other producers' calculations of the extent of the market and the supply of labor and raw materials which will be available for themselves.

A possible way out of the dilemma is the imparting of confidential information to a public or private statistical bureau with the understanding that the results will be published only in the form of totals or averages, or otherwise so treated as not to indicate the position of individual firms. Much progress has been made by various agencies in the last few years in obtaining the co-operation of business men in such endeavors. Examples are the studies of retailers' costs made by the Harvard Bureau of Business Research; the data on volume of current production and stocks of goods published monthly by the Department of Commerce in the *Survey of Current Business;* and numerous surveys of particular industries published by trade journals. Open price associations have also done something to reduce the amount of uncertainty concerning the business outlook, but such organizations find it difficult to steer clear of the antitrust laws. Further progress along this line, it is to be hoped, will afford a better means than we now have for reducing the irregularities of business activity.

Aside from the data given out in this way, the principal information available concerning the prosperity of individual corporations is found in the annual or more frequent reports of income and statements of assets, the reports of business failures, and changes of dividends. To each of these, consideration will be given.

The reports of industrial corporations concerning their activities are issued so infrequently, and, as a rule, so long after the period to which they refer that they are of little value as indices of the general business situation, though they are very valuable as records of the course which prosperity and depression have taken in the past. Even in the case of corporations which issue quarterly statements of earnings, the information is delayed to such an extent that it usually is of value only to investors or speculators who are dealing in the securities of the individual corporation, and not to the student of the general

situation. Moreover, the reports of corporations are so apt to be colored by the interest of the management in making a showing of prosperity or of poverty that they must be used with caution.

The foregoing generalizations have no application to the railroads. Railway earnings are published monthly, and uniform accounting methods are prescribed by the Interstate Commerce Commission so that the results for different roads and for different periods are comparable.

Dividend payments are even less reliable than statements of net earnings as indications of business conditions, because changes in dividends lag far behind the changes in business conditions which cause them. This is particularly true of the relation of dividend increases to business recovery. Reduction or passing of dividends follows more promptly on a collapse of prosperity, but so far as the general situation is concerned it tells only what is already known. Investors are of course very directly interested in the passing of dividends by corporations whose securities they own, but the action of one company is of little value as a forecast of what another company will do.

Numerous increases of dividend rates and the declaration of extra dividends are often considered to be a sign of better days ahead, but such an interpretation is more likely than not to be incorrect. When business is increasing relatively few concerns find it good policy to make extra large disbursements. Rather they reinvest their earnings to provide facilities for taking care of their expanding volume of business. It is at the *end* of a period of prosperity when large profits have been accumulated and there is no prospect of their being needed for further expansion that good policy permits the declaration of abnormally large dividends.

Moreover, the dividend policies of corporations seem frequently to be regulated with a view to promoting the interest of insiders in stock-market dealings, and extra dividends in the closing days of prosperity are an excellent device for strengthening the market until stocks can be distributed.

Business failures are a useful barometer.—Monthly figures for commercial failures are published by *Dun's Review* and *Bradstreet's,* and these are quite widely reprinted. These are failures involving losses to creditors. There are no statistics of industrial failures and none for failures which result only in the loss of the owners' capital. The figures, both those for number of failures and those for total liabilities, show a high degree of correspondence with the activity of general

business. Failures, which are at a minimum in the latest stages of prosperity, increase very suddenly, reach the maximum while liquidation is at its height, then decrease gradually through the following periods of depression, recovery, and prosperity. Since 1890 the proportion of concerns failing has ranged from .38 of 1 per cent in 1919 to 1.32 in 1915.[1]

Bradstreet's classifies its data according to the causes of failure, such as incompetence, lack of capital, competition, etc., giving annually the percentage which is accounted for by each cause. The classification has no apparent value for barometric purposes; indeed, it is so vague that most failures could properly be classified under two or more captions. There is a pronounced seasonal variation in the statistics, January having by far the most failures, and December ranking second.

Business failures form a convenient and readily accessible indication of the degree of prosperity. Their chief defect as a forecaster is that their increase comes abruptly at a time when liquidation is already obvious, while their decreases are so gradual that it is difficult to judge when the number is approaching a minimum.

New security issues show some effect of the business cycle, but are of no particular interest as barometers.—In times of prosperity, stock issues predominate. In the earlier part of a depression, there are numerous bond issues designed to enable the issuers to pay off their bank loans. Many of these bond issues are of a highly speculative character. Later in the depression period, high-grade bond issues are brought out by strong corporations in order to refund short-term notes and callable bonds at the low rates then prevailing. These changes, however, merely reflect the changes in the rate of interest and in public confidence, and nothing is added to our understanding of the current situation by tabulating them for study.

Statistics of the iron and steel trade are given a great deal of attention by students of the trend of business.—This is true because of the extent to which activity in the production of iron and steel is essential to activity in the production of almost everything else. Building of every kind, the construction of railways and of railway equipment, the manufacture of agricultural implements and of nearly all kinds of machinery, all make heavy demands on the steel capacity of the country, so that a marked increase or decrease in the activity of almost any industry is reflected in the orders for iron and steel.

[1] *Dun's Review*, XXIX, 18–19, quoted by Jordan, *Business Forecasting*, p. 159.

For recent years, statistics of this industry are available in great variety, but those to which most attention is given are the figures for the production and price of pig iron and the unfilled orders of the United States Steel Corporation. Of these, the most useful are the figures for pig-iron production. Pig-iron production conforms quite closely in its fluctuations to the movement of the business cycle as indicated by other barometers. Normally, its fluctuations are concurrent with, or slightly in advance of, the major changes in prices. In the cycle of 1919–21, however, pig iron lagged far behind the course of general business, reaching a minimum in the autumn of 1919 and a maximum in the autumn of 1920, some eight months after Bradstreet's index in each case. This irregularity, at least so far as the low figure for 1919 is concerned, is to be accounted for by the strike in the plants of the United States Steel Corporation.

Pig-iron prices move in fairly close conformity with the fluctuations in business, but they are so largely subject to control in accordance with the judgment of a few individuals that they are less trustworthy as business indices than are production figures.

The unfilled orders of the United States Steel Corporation, published quarterly from 1901 to 1910 and monthly since that date, move in close conformity to the changes in the production of pig iron, normally, however, changing a trifle earlier. In theory, orders should be an earlier index of coming changes than production, but the number of *unfilled* orders is so affected by changes in the rate of production, quite apart from changes in demand, that the priority of movement is not uniform and the significance of the figures is not always clear.

Agricultural production gives no clear indication of the business outlook.—The influence of agricultural production is perhaps the most difficult factor to analyze in the whole problem of the coming and going of prosperity. The difficulty does not arise, however, from the lack of information, for we have not only excellent statistical data concerning the volume of output and the prices of leading agricultural products but also frequent forecasts throughout the crop year, some compiled by private agencies and some by the Federal Department of Agriculture. The difficulty arises from the apparent lack of correspondence between the actual relations of agricultural production and business prosperity and the relations which economic theory lead us to expect. Nearly all those who have written on the subject of the business cycle have agreed in emphasizing the fundamental importance of crops in determining the prosperity of general business.

The generally accepted doctrine has been well summarized, for instance, by J. H. Brookmire:

Crops affect business: (1) by directly determining the ability of the farmer to buy factory products, his annual purchasing power through crops amounting to about $9,000,000,000; (2) by indirectly determining the amount of merchandise which persons employed in manufacturing and mercantile lines and all other non-agricultural pursuits can purchase, for if they must pay high prices for food there will be less to spend for merchandise, and vice versa; (3) by determining the earnings of the railroads, for railroad traffic largely consists in hauling farm products or merchandise to be exchanged for farm products, and since the crops largely determine the ability of the railroads to buy new equipment and make improvements, it follows that crops thus indirectly determine the degree of prosperity in the iron and steel business, which is the basic industry of the country. Thus it is evident that activity in transportation, iron and steel, hardware, textiles and all other lines of business finds its stimulative source—its fountain-head—in the agricultural harvests of the country. Prosperity fundamentally depends upon the condition of the soil, and the business men of this country always adjust their commercial commitments to the prospects of the harvests to a greater extent than to any other one factor. . . . .[1]

Mitchell is less emphatic, but says, "good crops tend to bring prosperity and poor crops depression in the seasons which follow. But the numerous exceptions to this rule show that other factors often overbalance the effect of the harvests."[2]

The theory above outlined seems sound. That abundant agricultural production is fundamental to the prosperity of the American people can scarcely be questioned, for nearly a third of our employed population are engaged in agriculture and a large proportion of the rest are in business which caters directly to the needs of the farmer. Moreover, more than half of the raw materials used in our manufactures are products of the farm. Short crops apparently mean hardship for the farmer, reduced earnings for the railroad, lighter employment for the railroad workers, higher-priced and scarcer raw materials for the manufacturer, and higher costs of living for the people, without an offsetting gain for anyone.

And yet it is impossible to find in our business history any confirmation of such a view. Neither as cause nor as effect do the lead-

[1] J. H. Brookmire, "Financial Forecasting," *Moody's Magazine*, XVI (1913), 19–21.

[2] *Business Cycles*, p. 239. See also for similar views Jordan, *Business Forecasting*, p. 80; Jones, *Investments*, p. 256.

ing crops appear to be related consistently to the fluctuations of business activity. It is true that in 1879 and in 1891 good crops sold at high prices on account of the foreign crop failure proved a direct and unmistakable stimulus to American business. In 1921, moreover, the business depression reacted so unfavorably on the position of the farmer through decrease in agricultural prices as to cause a startling curtailment in farmers' buying, which in turn struck heavy blows at the prosperity of not only all mail-order houses, implement manufacturers, and fertilizer companies, but of every line of business whose sales territory was in the West or South. But, as a rule, no such connection between crops and prosperity can be traced. The fluctuations in the curves of cotton, corn, and wheat production rarely coincide, and when they do, they do not forecast corresponding changes in general business. Cotton and wheat production were both unusually large in 1898, declined greatly in 1899, and recovered in the years immediately following; improvement and prosperity were unbroken from 1897 to 1903. All the major crops declined in volume in 1903, and depression followed in 1904, but they all increased in 1906 to practically the highest figures known up to that time, and though they were somewhat smaller in 1907, were still above normal in that year, yet a severe depression began at the end of 1907.

The explanation of this lack of harmony between the results of observation and those anticipated from the standpoint of theory is somewhat obscure. It must be remembered however that very large or very small crops of all the leading agricultural commodities seldom occur in the same year, so that a shortage in cotton is very likely to offset, to a large extent, the effect of a bumper crop of wheat, and vice versa. It must be borne in mind also that the purchasing power of the farmer depends not on the size but on the *value* of his crop, and that a rise in prices usually offsets part of his loss from a short crop. Indeed sometimes, especially in the case of cotton, the increase in prices more than offsets the loss in production. In 1914, an enormous cotton crop sold at bottom prices caused almost a collapse of the whole economic structure of the South, while in 1921 a short crop was hailed with delight as promising relief from the prevailing depression. This does not mean that the loss from short production is less than it would be if prices were not affected by the size of the crop. What the farmer gains by high prices someone else always loses; what he loses by short crops no one else gains. But the high prices do mean that the loss from short crops is in part shifted to for-

eign nations, in part diffused among a larger group in this country, and in part distributed into succeeding years through a reduction in the carry over. The loss from higher-priced raw materials is largely absorbed in corporation profits without necessitating changes in dividend rates, or carried into prices of manufactured goods which are not finally sold until later years, and are in part sold abroad.

The loss to the railroads from crop failure is genuine, but its importance is much less than it was a generation ago. No important railroad is now dependent solely on agricultural production for its traffic. Even such a highly specialized grain-carrying road as the Missouri, Kansas, and Texas collects less than one-fourth of its freight revenue from products of the farm. Moreover, such effect as the short crop does have is distributed through several years. Less labor is employed in transportation of crops in the year in which the shortage occurs; equipment purchases are more likely to be reduced in the following year.

Thus throughout the industrial structure, the influence of several crop years gets averaged, some parts of the country and some lines of business feeling the effect of one year's short crop while others are feeling the effects of another year's good crop, and the effect on general business activity of any particular crop becomes so blurred that it is quite hopeless to try to draw any conclusions from the crops as to the outlook for business in general.

All this is not to say, however, that the crop outlook is of no barometric significance. It simply means that the crops are among the things which cause one business and one section to prosper while another is depressed, rather than the things which determine the tidal swings of the market as a whole. Each business man has to study not only the outlook for business in general but also the factors which affect peculiarly the lines of business and the locality in which he is interested and make its outlook different from that of business as a whole. In this latter task, a study of the crop outlook is likely to be of primary importance.

Stock prices have a high reputation as business barometers.—The stock exchanges of the country all publish daily records of the highest and lowest prices paid for each security, together with the number of shares sold, and numerous averages of the prices of selected lists of stocks are published by periodicals and financial services.

In general, stock prices, particularly prices of industrial stocks, are among the first prices to rise and also the first to fall, in the course

of a business cycle. It is for this reason that so high an estimate is placed upon their barometric significance. For instance, before the crisis of 1907 stock prices showed a downward trend from January, 1906, and before the crisis of 1920 they turned downward in November, 1919. Likewise in 1904, 1908, 1915, and 1921 they turned upward from four to eight months before the appearance of rising commodity prices and increased business activity.

Much caution is necessary in using stock prices as an index of the business trend, however, for the reason that the stock market has many minor fluctuations which are quite independent of the course of business in general. Hence it is necessary after a change in the trend of stock prices to wait for some weeks to see whether there has occurred a real reversal of trend or only a minor fluctuation. Moreover, even the major changes in stock prices are not always followed by similar changes in commodity prices and business activity, though changes in business activity seem always to be preceded by similar changes in the trend of stock prices. For instance, in 1899 and 1900, in 1910, and in 1917 major declines in the stock market gave warning of similar declines in other indices of prosperity, but no such declines occurred.

The most reliable and hence the most important group of business barometers is the group which relates to the money market.—Credit is the life-blood of modern business, and the banking system constitutes the circulatory apparatus through which credit is made available for the more directly productive parts of the industrial organism. Hence, irregularities in the operation of the banking system are as significant to the student of industrial ills as are irregularities in the pulse beat to the physician.

Banking barometers fall into three principal classes: indices of the volume of business transacted, of which the clearings and the checks cashed are the most important; statements of the condition of the banks, including the weekly reports of the Federal Reserve System, the reports of the Comptroller of the Currency on the condition of national banks, and the reports of state banks and trust companies; and finally rates of interest on various classes of loans.

Bank clearings and check transactions furnish a measure of the activity of business in the country, hence are more significant as general business barometers than as indices of the position of the banks. For comparisons extending over a considerable period of time, the best index of the volume of payments is the record of clearings. These figures

are collected by the *Commercial and Financial Chronicle* and by *Bradstreet's*. For the last few years the figures of *individual debits at member banks* have been collected by the Federal Reserve Board. This is the figure for the total number of checks cashed and other charges made against individuals' accounts, and is a more accurate index than the clearings, which include only checks deposited in banks other than the ones on which drawn, and omit a considerable proportion even of these. When the individual debits have been collected for a sufficiently long period to make significant comparisons possible they will presumably supplant the clearings for forecasting purposes. There appears to be little difference in the direction and relative amount of the changes indicated by the two barometers, however.

In using bank clearings as a barometer of general business, it is customary to omit the figures for New York City, on account of the large influence exerted on those figures by changes in the volume of speculation at the Stock Exchange. Outside clearings fluctuate, in general, in much the same way as pig-iron production, wholesale prices, and business failures; that is, they give a fairly consistent picture of the changes in the volume of business transacted, but do not anticipate changes in such a way as to give them any marked superiority over the other standard indices.

Statements of condition of the banks are more difficult of interpretation than they were before the introduction of the Federal Reserve System.—In former days, when the national banks were required to keep in their vaults a definite proportion of their deposits in lawful money, the surplus reserve over this requirement, particularly the surplus reserve of the New York banks, was regarded as one of the most sensitive barometers of financial weather. Since the introduction of the Federal Reserve System, attention has been shifted to the reserve ratio of the Federal Reserve banks. This item cannot be interpreted with the facility with which the surplus reserve of former days was interpreted, because of the extent to which the control of Federal Reserve credit resources is exercised in accordance with the judgment of a small number of individuals. If it were certain that the Federal Reserve Board would in the future be guided by the Federal Reserve ratio in determining its credit policy in the way that directors of competing banks were guided by their reserve ratios before the Federal Reserve System was established, the ratio of cash reserves to combined notes and deposits of the twelve banks would be better

worth watching than any single index which can be obtained. But the Federal Reserve Board is a body with large discretion and has a responsibility to administer the affairs of the system with a view to the public interest rather than with a view to earning the largest profits consistent with safety, and the element of personal judgment makes their action difficult to forecast. So far, the rise and fall of the combined ratio has seemed to be their most important guide, but there is no assurance that it will continue to be so.

Fluctuations in such items as *total gold reserve*, *national bank notes outstanding*, *Federal Reserve notes outstanding*, and data relative to *fiscal operations of the government* are now of little barometric importance. *Total bills discounted* is an item of more significance, as it shows the extent to which the banks are using the rediscounting privilege, and thereby indicates the extent to which interest rates in the near future are likely to be controlled by the policy of the Federal Reserve Board. *Turnover of bank deposits* is a new statistical item, collected by the Federal Reserve Board from a limited number of banks, which promises to be of considerable value as an index of business activity, but is not yet available for a sufficiently long period to make careful comparative study of its behavior feasible.

The most valuable single indices of business conditions are found in the rates of interest.—This is true partly because of the abundance and accuracy of the data, partly because of the consistency with which changes in the money market precede changes in general business, and partly because the part played by money-market conditions in *causing* changes in prosperity is great enough to make it possible to make allowance for exceptional conditions more readily than is possible in using forecasters whose relationship to the phenomena forecast is purely empirical.

Our statistical information in regard to the prices charged for the services of capital is very satisfactory. Data are available for a large number of kinds of financial transactions, and most of the information appears quite promptly, so that the external difficulties in the way of the forecaster are at a minimum in working with this type of barometer.

The interest rates which receive the most attention from a barometric standpoint are (*a*) *the yield on high-grade bonds;* (*b*) *the rate on prime commercial paper* (i.e., notes bought from business houses by note brokers and sold to banks); (*c*) *the rate on thirty-, sixty-, and ninety-day loans "over the counter"* (i.e., direct by banks to their own

customers); (*d*) *the Federal Reserve rediscount rate;* (*e*) *the call-loan rate.*

The rates on brokers' paper and those on short-time loans over the counter correspond very closely in the direction and time of their changes, so that one will serve as well as the other for forecasting purposes.

In general, all interest rates rise very late in a period of improvement or prosperity, reach their maximum during, or soon after, a crisis, and decline only after the liquidating process is fairly well completed. Call loans show by far the widest range of variation, and change the most frequently. They have many ups and downs which are not connected with changes in the activity of business. Bond yields are at the other extreme, showing comparatively little change, as a rule, except in periods of very great change in business conditions. Rates on short-term paper are intermediate in character, and are excellent indices of the trend of business conditions. They move so late in the cycle as to forecast a turn of other indices in the opposite direction. When they turn definitely either up or down after a long trend in the other way, a change in commodity prices and business activity *in the opposite direction* may generally be expected within a few months. Bond prices are also a fairly good barometer. When the average price of a selected group of high-grade bonds changes the direction of its trend, there generally follows a like movement in the stock market, and less uniformly, there ensues a few months later a similar change in commodity prices and the volume of business.

Changes in the Federal Reserve rediscount rate, i.e., the rate charged by the Federal Reserve banks to their members in rediscounting loans, are perhaps destined some day to rank as the most important indicators of the trend of money-market conditions and the consequent outlook for business prosperity, but we have had, as yet, too little experience with the Federal Reserve System to enable us to lay down any final rules for interpreting this index. The object aimed at in establishing the system was that most of the elasticity of credit in the banking system should be in a central reservoir of credit, so that the member banks would have to resort to this central agency in times of expanding business in order to take care of the increasing demands of their customers. In line with this purpose, it is held that any increase in rates or restriction of credit initiated by the Federal Reserve Board will radiate through the system and cause a corresponding rise in rates and curtailment of credit, which will check the

expansion of business. It is the function of the Federal Reserve Board to keep an eye on the progress of business and check inflation before it reaches the point where a collapse is inevitable. Vice versa, in times when business is dull the Federal Reserve Board can supply a stimulus by lowering rates and encouraging expansion through a liberal rediscounting policy.

To the extent that the banks of the country become dependent on the privilege of rediscounting their customers' notes at the Federal Reserve bank, it is clear that there do exist great possibilities of controlling the course of business through control of the supply of credit. At the height of the boom in the autumn of 1919, it was announced that an increase in the discount rate could be expected in the near future, and this was apparently one of the important causes of the decline in stock prices which started in November of that year. The rate was actually increased in January and again in June of 1920, and it is generally believed that this action was one of the major causes of the commodity liquidation, which was evidenced by the downward turn of Bradstreet's index in February of 1920, and of the credit collapse which followed.

As our analysis of the cycle in chapter v has indicated, there is a considerable amount of exaggeration in this view, though it contains a large element of truth. The speculative accumulation of securities and commodities in anticipation of further and further increases in price, and the continuous expansion of certain types of productive capacity, could not continue indefinitely, and the decline once started was bound to gain momentum. But it was in the power of the Federal Reserve Board to hasten by positive action the downward turn which it could not prevent by keeping its hands off.

On the other hand, the power of the Board to hasten the return of prosperity by lowering discount rates is not so clear. The rate was reduced twice in 1921 without stimulating any considerable increase in rediscounting, so that any effect the reduction had in stimulating business must have been sentimental. The difficulty in the way of stimulating a rise is very much greater than that involved in checking a rise. When business is active the banks are led to utilize their own resources and are put in a position of dependence on the rediscounting agency. In a period of depression, however, they have unused resources of their own, and are in a position to take care of a considerable increase in customers' demands without borrowing. No matter how low the rate, they will not rediscount so long as their own

funds are lying idle. Hence a lowering of the rediscount rate is like an importation of gold in times when reserves are already superabundant, or an immigration of labor in times when our own labor forces are largely unemployed, or the opening of new land for settlement in a pioneer country where there is already good, free land. It has no immediate, direct effect; it only gives assurance that there are larger resources to be drawn upon in case of need.

The call-loan rates are of no barometric significance except to stock-market speculators, and of very little significance even to them.[1] Very high call rates precede, and still higher rates accompany, a panic, but there are many extreme fluctuations in call-loan rates which are not the accompaniment of important changes in business, so that conclusions based on the call rates necessarily involve a large margin of error.

The rates of foreign exchange do not constitute a reliable business barometer, but they deserve brief notice because so many people attempt to make barometric use of them. Under normal conditions, the rates of exchange reflect changes in the volume of payments to be made between countries, but these changes are rarely of any importance from the standpoint of the outlook for prosperity in this country. During and since the war, the European exchanges have in many cases been maintained by deliberate action of governments at certain levels, and where this is not the case they reflect speculators' estimates of the financial and political prospects of European government rather than business conditions or prospects. This is not true of some of the neutral countries, but in the disturbed condition of European finances it is quite hopeless to undertake a business forecast on the basis of the evidence furnished by any type of foreign exchange.

Numerous indices may be combined into a single "composite barometer."—There are so many kinds of business statistics, and it is so difficult to estimate the relative importance to be attached to each of them, that it has occurred to many students of business conditions to try to cut short the task of interpretation by combining the whole body of data into one or more averages. Their idea is that if proper weight is given to each item in constructing the average, the result will be a more dependable indication of the general outlook than will any single item. Such averages are known as composite barometers. Supporters of this method of studying the business outlook point out

[1] The point is discussed more fully in chap. ix.

that all use of statistics rests upon a process of throwing together, into a single class, items which are not exactly alike, and that making a composite barometer in which, for example, pig-iron production is combined with bank clearings, is only a step further than the combining of different kinds of pig iron or the clearings of different cities into a single item. In the latter case, the items combined differ in some ways but are alike in the characteristics in which we are at the moment interested, hence, we are justified in throwing them together; if changes in pig-iron production and in bank clearings actually do have the same significance for our problem, we are equally justified in combining them. It is of course important that the figures shall be so handled that each shall have its proper importance in comparison with the others, but it is perhaps no more difficult to determine their relative importance for the purpose of making the composite barometer than it is to determine the relative importance to be ascribed to each item when they are studied separately. The composite barometer has the great advantage that once the averaging is done anyone can use the results without repeating the whole process of weighing and comparing the data.

On the other hand, the differences between items always have some significance, and the more averaging we do the more details of the evidence we lose. How far it is best to combine data depends on the amount of time the users of the reports are willing to spend in comparing items, and on the relative importance attached to the similarities and the differences in the data. No one can make anything out of a mass of raw statistics without some classification, while an excessive amount of combination squanders part of the evidence.

In the construction of all such composite barometers, two adjustments are necessary. In the first place, allowance must be made for "seasonal fluctuation," that is, the change which occurs regularly at the same season of year. In many cases, this allowance must also be made in interpreting data without the use of composite indices. For instance, in 1921, very gloomy predictions concerning the outlook for the finances of the railways were made in the press on account of the falling off in traffic during the winter months, disregarding the fact that most of the decline was to be accounted for as a normal seasonal tendency.

The other correction which must usually be made is an allowance for the normal increase in the volume of business, which occurs from year to year with the growth of the country. For example, between

1903 and 1915, the production of pig iron in this country increased from 17,000,000 to 29,000,000 tons. Yet during this interval there were four years when the production was smaller than in the preceding year. Clearly we have to deal here with at least two distinct types of variation, the general increase running on from year to year, and the fluctuation which accompanies the coming and going of prosperity. The correction of the statistics for this growth element is made by estimating the normal increase and converting the actual figures into deviations from this normal figure. In making a composite index, the trend may be removed from the composite figure, or, better, removed from each item separately before the average is computed.

The earliest composite barometers in the United States were compiled by commercial organizations whose business was the sale of statistics and advice to business men for their aid in deciding questions of business policy and especially investment questions. Of these barometers, the best known and the simplest is the "Babson Compositplot," published by the Babson Statistical Organization as one feature of an extensive business, investment, and speculative service.

The "Babson Compositplot" is based on the theory that "action equals reaction."—The "Compositplot" consists of a line drawn on a chart to represent the average of certain business items for successive periods, beginning with 1904, through which line is drawn another representing the normal growth of business for the same period, the area between the line of normal growth and the line of actual growth being heavily shaded. The interpretation of the "Compositplot" is that the formation of an area above the line of normal growth forecasts the formation of an area of similar size below the line of normal growth, and vice versa. The construction of the chart has been described by its inventor, Mr. Roger W. Babson, as follows:

> In recent years there has developed a school of thought which bases its prognostications on what is known as the "area theory." This area theory considers both the factor of time and the factor of intensity, or prices. Their prognostications of prices are based on the product of these factors of time and prices, or, in other words, on the area consumed.
>
> In short, this new school draws an oblique line, with a slope based on the normal increase in the nation's volume of trade. Starting at a time when the business of the country is practically normal, such as early in 1903, actual business conditions are plotted from month to month. This gives certain areas below and above this line of normal growth. . . . .

This Composite plot, therefore, shows merchants the actual conditions existing at any given time and, on the assumption that these areas tend to be equal in area, not in shape, it aids them in forecasting future conditions by showing whether the next area may be expected above or below the line of normal growth and about how long before it will come. . . . .

A little thought shows how reasonable is this theory and how it automatically adjusts itself to conditions the same as a "governor" on an engine. For instance, if prices increase twenty-five per cent above normal, it is not reasonable to think that they will continue to go up until they reach the last previous high price of one hundred per cent, irrespective of the time consumed, but it is reasonable to suppose that after prices have held this increase of twenty-five per cent for a period of four times as long as they had when selling at the previous high advance of one hundred per cent, that the time has arrived when logically they should fall.

In other words, the theory is that business conditions, as a whole, can continue with "the throttle one-fourth open" about four times as long as with the throttle wide open; or, to word it another way, when conditions are "doubly prosperous," said prosperity can last only one-half the period of time that it could if conditions were only moderately prosperous. This school believes that if the country would be willing to run along at a normal rate of speed so that the line for actual business would correspond with the line of normal growth, we would always have moderately prosperous conditions with a steady, slow advance. On the other hand, the higher the line for actual business rises above the line of normal growth, the shorter length of time prices will remain high and conditions abnormally prosperous.[1]

The "Compositplot" is compiled in the following way: The actual figures for the data which enter into the plot are reduced to "index figures" through the use of technical methods which are the invention of the Babson Organization. The data are then segregated into the following groups:

Mercantile conditions
1. Immigration
2. New building
3. Failures
4. Check transactions[2]

Monetary conditions
1. Commodity prices
2. Total foreign trade
3. Foreign money rates
4. Domestic money rates

[1] Annals of the American Academy of Political and Social Science, xxxviii, 180–83. (Philadelphia, 1911.)

[2] Check transactions substituted for bank clearings January 1, 1922.

Investment conditions

1. Yield of leading crops
2. Railroad earnings
3. Canadian conditions
4. Stock-market conditions

Then the figures in each group are combined to give an index number which reflects the activity of business in general.

After the index numbers are compiled and plotted it remains to locate the *X-Y* line, or line of normal growth, in order that the areas above and below the line may be compared. In doing this, bank clearings outside New York City are used as an indicator, but the trend shown by the clearings is modified by observation of the other data. As the compilers have stated it:

As it is always dangerous to use one subject alone, especially a subject reflecting surface movements, it is necessary to take bank clearings as an indicator only, and to check conclusions based upon it, at the end of each year, by all the important barometers of wealth which report annually; and again, at the end of each cycle, by the area of the Compositplot. In other words, we endeavor to rely only on our statistics in locating this *X-Y* line and thus far we have usually been able to do this, but we frankly assume that the areas should be equal. Therefore, this chart does not prove that the law of action and reaction applies to business, but rather assumes it.

The location of this line is fundamentally based on the assumption that action and reaction are equal when the total force involved is considered, which force may be expressed graphically by an area. If this assumption is correct, the sum of the areas below the line of normal growth must approximately be equal to the sum of the areas above the line of normal growth; and by the law of averages all of the areas tend to be approximately equal. In other words, if the law of equal reaction is applicable in economics as in every other science, then our line is located with sufficient correctness; on the other hand, if this law of action and reaction does not apply to economics, then of course the Area Theory cannot be relied upon for forecasting business changes and these areas are of use simply as a general bird's-eye view of conditions. *At the end of the last cycle, however, no readjustment was necessary to make Areas "D" and "E" equal. This fact is a most interesting testimonial for the Area Theory.*

It appears from the foregoing discussion that the so-called line of normal growth does not in fact represent merely the normal growth of the country, irrespective of temporary conditions of prosperity and depression, but is itself in part an expression of the prosperous or

depressed state of business at a particular time. This throws some doubt on the propriety of using the X-Y line as a base from which to measure areas representing the extent of prosperity or depression.

A more serious defect of the Babson chart, however, from the standpoint of scientific method, is the lack of satisfactory proof of the fundamental principle of "action equals reaction." It may be true that "the law of action and reaction applies to economics and human relations, *en masse*, as it applies to mechanics." The facts available are not conspicuously inconsistent with the theory. But there has been no satisfactory investigation to determine the weight of evidence in favor of the theory, and it cannot at present be regarded as more than an interesting hypothesis. Until such research is accomplished, students of social science will remain skeptical of the validity of forecasting methods which depend on its detailed application.

The Brookmire barometers combine data which have been classified according to the sequence of their fluctuations.—The theory of forecasting upon which the methods followed by the *Brookmire Economic Service* are based, instead of combining all the statistical data into a single index, postulates a chronological sequence of business events, and combines only those which tend to fluctuate at the same time. The data for most of the barometric indices constructed by this service have therefore been selected because movement in them occurs in point of time prior to some price index or other statistical factor which it is desired to forecast, rather than in an attempt to portray the entire field of business conditions in a single picture. The Brookmire organization claims that one great fundamental factor which James H. Brookmire, the founder of this service, brought as a new contribution to the science of business forecasting was the conception that changes in financial and business conditions do not all occur at one time but do occur in a chronological sequence.

Both seasonal variation and secular trend are mathematically eliminated from the data used in the final presentation before they enter into the Brookmire barometric chart. Of the many barometric charts which have been constructed in seeking statistical measures which move prior to many factors which an economic service seeks to forecast in its regular work, only the two which are now being published and one important forerunner will be described.

"Barometer No. 1" is a chart which is intended to forecast the movement of industrial stock prices and of commodity prices. The theory of the barometer is that whenever the forecasting line turns

upward, industrial stocks will rise almost at once and commodity prices about six months later than industrial stock prices, with the qualifications (*a*) that the change in commodity prices is more accurately forecast by the turn of the stocks than by the turn of the forecasting line and (*b*) that in cases where the upward or downward movement of stock prices reverses itself within six months, the corresponding movement of commodity prices is likely to be too small to be of any practical importance. The forecasting line is a mathematical composite of the following six factors, each given the weight "which past experience indicates that they really have" in every change of business and investment conditions:

1. A combination of industrial and railroad stock prices. These are included on the theory that when stocks are selling at higher than average prices they are likely to move downward, and vice versa.
2. Physical volume of commodities coming into the market. Eight measures of volume are used to test this factor. The theory is that accumulation of excess stock is likely to lead to liquidation. and shortage is likely to lead to increased production.
3. The ratio of merchandise imports to merchandise exports. Exceptional imports are considered to be equivalent to exceptionally heavy volume of production.
4. Turnover of bank deposits.
5. Commercial paper rates.
6. Interest rates in London.

"Barometer No. 2" is a similar forecasting line which is intended to forecast the movement of the prices of bonds and of railroad stock. This barometer is constructed in the same way as Barometer No. 1 except that commodity prices are introduced as a seventh factor, on the theory that advancing prices of commodities are unfavorable to bonds and to railroad stocks.

Notice should also be taken of a chart formerly published by the Brookmire Service, "The United States Barometer Chart," which is important as a forerunner of the chart now published by the Harvard Economic Service. This chart contained three factors, which were plotted separately: (1) the index of banking funds; (2) the index of security prices; (3) the index of general business. It was stated that these three graphs moved in chronological order, the banking index rising first, followed by the stock-market index, and finally by the business index. A great rise in the business index, in turn, produced a fall in the banking index, and this was followed in turn by the stock-

market index, and the business index, and the cycle was ready to start again.

The banking index was based upon (*a*) the total cash and reserves of New York clearing-house banks; (*b*) the percentage of these reserves to loans; (*c*) the percentage of loans to deposits; (*d*) the rate on first-class commercial paper in New York (*b*, *c*, and *d* reversed in sign). The index of security prices was an average of prices of thirty-two leading stocks. The index of general business was based on bank clearings, railroad earnings, pig-iron production and prices, commodity prices, imports, building, and immigration.

This sequence, it will be noted, is practically that which was indicated as typical in an earlier section of this chapter, and has in most respects been verified by the investigations of the Harvard Committee on Economic Research. The introduction of the Federal Reserve System and the restriction of immigration, however, have destroyed the former relationship between certain of the items.

The Harvard "Index of General Business Conditions" represents the most ambitious and painstaking effort yet made to establish a relationship between the coming and going of prosperity and the fluctuations of selected data which may be used as forecasters.—This index was developed by the Harvard Committee on Economic Research and is published in the *Review of Economic Statistics* and in the *Harvard Economic Service.*

In brief, this investigation is an attempt to apply the method utilized at an earlier date by Brookmire, of classifying the data with respect to the *time* of their typical fluctuations, putting into one group those items which tend to move ahead of changes in the volume of general business, into a second those which serve as thermometers reporting the activity of business at a given time, and into a third those which generally lag behind; then combining those which move together into a composite index so that the effect of accidental variation in one item may be reduced or eliminated. The movement of one index is regarded as a forecaster of the next. A more minute classification into five groups has also been made, though the three-group classification has so far appeared to be most useful.

The principal differences between this investigation and those which have preceded it, particularly Brookmire's, are first, the much more elaborate and scientific methods used to get rid of the seasonal fluctuations and the secular trend, and second, the classification of the

data into groups according to the results of a very minute study of the order in which they have preceded one another in the past.

Every effort has been made to treat the statistical data in an impersonal way so that the element of personal judgment may be reduced to the minimum and the results may be the same that any scholar would get from the same data. The question whether one item typically precedes another in its rise and fall has been determined, not by analysis of the cause and effect relation between them, but by figuring mathematically the degree of correspondence between their fluctuations when they are compared as they occurred, then moving the record of one of them two, four, six, or more months ahead of the other and calculating the degree of correspondence again. The degree of correspondence is figured by the use of the "coefficient of correlation," a device widely used in biological studies and introduced into social and business studies within the last fifteen years, chiefly by English statisticians.

The validity of these mathematical methods of treating statistical data depends on the utilization of statistics covering quite a large number of cases, hence the choice of data is limited to those items for which comparable data are available over a long period. For comparison involving annual data, only those items have been used which could be traced back in comparable form to 1879, while monthly data running back to 1903 have been considered sufficient. Seventeen series of annual data for the years 1879–1913 and twenty-three series of monthly data for the years 1903–16 or for longer periods were included. The twenty-three series are as follows:

1. Bank clearings of New York City
2. Tonnage of pig iron produced in United States
3. Bank clearings outside of New York City
4. Bradstreet's index of commodity prices
5. Imports of merchandise into United States, values
6. Values of building permits issued for twenty leading cities
7. Gross earnings of ten leading railroads
8. Number of shares sold on the New York Stock Exchange
9. Unfilled orders of United States Steel Corporation
10. Tonnage, less lake traffic, of vessels entered in the foreign commerce of the United States
11. Bradstreet's number of business failures

12. Rate of interest on ten American railroad bonds
13. Rate of interest on four to six months' commercial paper
14. Rate of interest on sixty- to ninety-day commercial paper in New York
15. Rate of interest on call loans at the New York Stock Exchange
16. Bureau of Labor Statistics' prices
17. Dividend payments
18. Prices of industrial stocks
19. Prices of railroad stocks
20. Incorporations in eastern states
21. Loans of New York banks
22. Reserves of New York banks
23. Deposits of New York banks

The first step in the analysis was the isolation of the various types of fluctuation which are found in the data. As a working hypothesis, these were considered as fourfold: (1) A long-time tendency to increase or decrease, which in technical language is termed the secular trend; (2) a cyclical movement superimposed upon the first, the extremes being found in periods of prosperity and depression; (3) a seasonal movement within the year; and (4) irregular variations. The four types of fluctuation are however not uniform in the different series, and in consequence individual treatment of each series was required. It became necessary first to measure the secular trend. This was accomplished by "fitting" a straight line or other curve to the graph representing the original series. For example, in treating bank clearings, a dot was placed on a chart so that its distance from the base indicated the volume of clearings in a given year, the years being measured off in equal spaces from the left side of the chart. It is obvious that if the increase in clearings were exactly the same in each successive year the dots would all lie on the same straight line, and the slope of this line would indicate the rapidity of the increase in bank clearings. The method of "curve fitting" consists in drawing a line so that it comes as near as possible to passing through all the dots. This can be done with great accuracy by the use of mathematical formulas. The slope of the fitted line is considered to measure the secular trend or normal growth, and the deviation of the dots from the line to measure the fluctuation not due to growth. The assumption is that a rate of growth, shown by examining data of a number of years in the past, will continue to be the rate of normal growth in the future, so the line is carried forward with a uniform

slope. It is recognized however that this trend can really be determined only for the past period, and in certain cases may by no means afford a good basis for estimating future trend.

The determination of normal seasonal variation in the data was next undertaken. The method used is very involved and may conveniently be divided into the following steps: (1) Relative figures are first calculated expressing the absolute figure for each month as a percentage of the absolute figure for the previous month; (2) medians of the month-to-month percentages are then calculated for each of the twelve months. The median is the item midway of the series. Thus it was found that in twenty-four years the business failures reported by Bradstreet's for April ranged from 77 per cent to 117 per cent of the figures for March of the same year, but that in half the years the percentage was less than 96 and in half more than that figure. Ninety-six per cent is therefore considered the typical ratio of failures for April to those for March, though it appears that in no year was the percentage exactly 96; (3) the medians are expressed as a continuous series using January as base; (4) they are then adjusted so that the discrepancy between consecutive January relatives (due to the secular trend) is 0; (5) they are changed to a new base by dividing each item in the fourth series by the arithmetic average of that series. These adjustments are technically necessary in order to get the results into a form to use them as corrective factors.

The series of items is modified by this seasonal corrective factor, and the resulting series gives the data with the influence of both secular trend and seasonal fluctuation eliminated. This is done as follows: Each of the "monthly ordinates of the secular trend" is multiplied by the index of seasonal variation for that month, obtained in the manner stated above. In other words, the line which depicts the normal growth of the item from year to year is modified so as to represent the normal growth plus or minus the normal seasonal fluctuation. The normal monthly figures obtained in this way are then subtracted from the actual figures and the result is a series of figures representing the *deviation* of the movement of the item, bank clearings, for instance, from what it would be if it were affected only by seasonal factors and the growth of business.

This series of deviations comprises the fluctuation due to the business cycle and also the irregular fluctuation caused by conditions special to the particular business from which the data are drawn. No attempt is made to separate the irregular from the cyclical factor,

but it is assumed in combining the data into a composite index the irregular changes in each separate series will tend to disappear and the general average will reflect the effect of conditions common to all lines of business, that is, of the coming and going of prosperity and depression.

Before the comparisons can be made, one other correction is necessary. Some of the series fluctuate widely, for instance, pig-iron production and call-loan rates. Others have a very narrow range of fluctuation, for instance, the yield on railroad bonds. Each series is therefore divided throughout by a figure representing its own average deviation from its own average. This makes the average fluctuations equal and facilitates comparison of the *time* of the fluctuations, which is the only thing we are interested in.

For technical reasons the standard deviation, which is the square root of the sum of the squares of the deviations divided by their number, is used rather than their simple average.

It was found that the series fall into three quite distinct groups when arranged in the order of their fluctuation. There were variations within the groups, particularly the middle one, but the degree of correspondence in each group was much greater than the difference between the groups so that the classification was unmistakable. The series which fluctuate first, either upward or downward, are all series depending upon investment and speculation, such as the average price of ten railroad bonds, the average price of industrial and of railroad stocks, the volume of sales on the New York Stock Exchange, and New York clearings. This is the speculative group.

The series in which the fluctuations follow or lag behind the fluctuation of the speculative group all have to do with business and industrial activity, such as pig-iron production, bank clearings outside of New York City, and wholesale prices.

The third group, in which the items lag behind the business group in their rise or fall, are items having to do with the banking business. They consist of interest rates, variously classified, bank reserves, loans, and deposits.

The final step in the preparation of the general index is to construct a curve portraying the combined data for each of the three groups of data. Curve A, representing the speculative group, forecasts by its rise or fall, a rise or fall in curve B, the business group; curve B likewise by its changes forecasts corresponding changes in curve C, the money group; curve C by its changes forecasts opposite changes in curve A.

It will be noticed that in the final classification and utilization of the data, this system bears a striking resemblance to the Brookmire method which was described on page 106. The Brookmire system was based apparently on observations and economic analysis; the Harvard system based on minute impersonal statistical analysis gives a striking confirmation of its most important conclusions.

The question next arises, what is the degree of success in forecasting by means of this system? For the period from 1903 to 1914, the curves show striking regularity. Both in the depressions of 1904, 1908, and 1911, and in the prosperity periods of 1905–6, 1909–10, and 1912, the curves turn up and down in invariable order and with a high degree of regularity in the time interval between them. This was only to be expected, however, as the indices were made chiefly on the basis of the actual course of events during this period. For the period from 1914 to 1918, the index proved to be valueless. The fluctuations of the data were determined by the exigencies of war production and war finance to such an extent that the normal relationships of the business cycle were entirely obscured. No conclusion as to the value of the barometer could be drawn from such an abnormal period.

For the years from 1919 through 1921, the charts ran quite true to form, thereby meeting their first real test. Curve *A* reached a maximum in October of 1919, curve *B* in February of 1920, curve *C* in July of 1920 and February of 1921. Curve *A* reached a minimum in July and October, 1921, curve *B* in May, 1921, and January, 1922, curve *C* apparently in September, 1922.

In conclusion, it may be said that the confidence to be placed in such a mechanical forecaster is a question which as yet cannot be answered, except from the standpoint of theory; there is not evidence enough to prove or disprove its pretensions. It should be added, however, that the publishers of the Harvard Index do not claim for it infallibility. They point out that such factors as the establishment of the Federal Reserve System, the destruction of capital during the war, and the change of the United States from a debtor to a creditor nation make it impossible to rely implicitly on forecasts based on the compilation of precedents and make it necessary to supplement the forecaster with the results of economic analysis. A similar attitude is taken by the publishers of the Babson and Brookmire charts. The charts are furnished in each of these three cases as one feature of an extensive service, other features of which include discussion of the extent to which special considerations necessitate

modifying the conclusions which might be drawn from the sequence of events in the past.

NOTE

SOURCES OF BAROMETRIC DATA

The essential barometric data are easily obtainable.—The available sources of barometric data fall into three general classes: first, the publications of government bureaus and of banks and other business institutions, which are available gratis or at nominal cost; second, the periodicals which deal with financial and business conditions; third, the special "business services."

Of the first class, there is a considerable number, of which the following are among the most valuable: the *Monthly Review of Credit and Business Conditions* by the Federal Reserve Agent of the Federal Reserve Bank of New York, the *Federal Reserve Bulletin*, the *Survey of Current Business*, published by the Department of Commerce, the *Monthly Bulletin* published by the National City Bank of New York.

Of the periodicals, the weeklies are by far the most valuable for forecasting purposes. The following are worthy of special mention: the *Commercial and Financial Chronicle*, the *New York Times Annalist*, *Commerce and Finance*, the *Economic World*, *Bradstreets*, *Dun's Review*, the Saturday edition of the *New York Evening Post*, the *Chicago Economist.* All these publish weekly summaries of most of the important data; a very brief comparison is sufficient to indicate which of them furnish the items in which one is particularly interested.

For those who wish more complete and earlier information as to the trend of business conditions and are willing to pay for having the data interpreted as well as collected, a number of special business services are available. The Harvard Economic Service, the service sold by the Babson Statistical Organization, and the Brookmire Service have already been mentioned in connection with the subject of composite barometers. In addition to the barometers described, each of these services furnishes bulletins dealing with current developments and offers interpretations and forecasts.

The Babson Service consists of a *General Barometric Bulletin*, containing the "Compositplot" with brief comments and a few notes on important developments affecting business in general; a *Buyers' Bulletin*, on commodities and prices; an *Industries Bulletin*, forecasting conditions in specific industries; a *Sellers' Bulletin*, which deals with business and credit conditions in specific localities all over the country; a special *Labor Bulletin;* and a *Bulletin* dealing with speculative securities and investments. The organization maintains a large statistical force, and furnishes a large amount of information concerning the general situation and also the specific details needed in modifying general conclusions to determine their application to the problems of the individual business. The Babson forecasts are very definite and specific.

The Brookmire Service furnishes an *Investment Opportunities Bulletin*, a *Speculative Bulletin*, a *Building Bulletin*, a *Sales and Credit Map*, a *Trade*

Bulletin, and a *Financial Bulletin*. These bulletins cover somewhat the same general field as is covered by the Babson Bulletins, though as the titles indicate there are some differences of emphasis. Like the Babson Service, the Brookmire Service makes very definite and intelligible recommendations concerning the specific securities to be bought and business opportunities to be cultivated or avoided.

The Harvard Service is relatively new, and represents the first effort on the part of an educational institution to enter the field of professional business advice. The principal features of the service are a weekly letter and monthly desk sheet, which include data of current barometric interest, both the actual figures and the items adjusted for seasonal and secular variation; the barometric curves discussed above and discussion of their significance; special articles dealing with current developments of importance, such as foreign financial conditions, tendencies in trade, etc.; other articles which present the result of special investigations, such as the tendencies of a particular industry during business depressions; and a quarterly publication, the *Review of Economic Statistics*, which contains more extended articles dealing with the theory and history of business cycles and kindred topics. The material published in connection with this service represents a very high standard of scholarship and has already included numerous valuable additions to our stock of knowledge of the phenomena of prosperity and depression. There is no attempt to recommend specific investments or details of business policy.

QUESTIONS

1. Show how the justification of the use of the sampling method in studying barometric data involves application of the law of large numbers.
2. "The changes wrought by the war make it necessary to supplement statistical comparisons with the results of economic analysis."
3. "Price changes may be said to forecast their own movements." Explain.
4. Compare the significance of railway gross earnings and of car loadings, as barometers of the volume of trade.
5. Under what conditions might the management of an industrial corporation have an interest in coloring the reports of the corporation to make it appear more prosperous? less prosperous?
6. Does the fact that staple agricultural products are sold in a world-wide market affect the barometric significance of the volume of production in this country?
7. Why do cotton prices show more tendency than do wheat prices to rise greatly in years of small production in this country?
8. Under what conditions may a heavy importation of gold result in an easing of credit in this country?
9. "Rising interest rates forecast falling bond prices." Why?

CHAPTER VII

RISK AND THE MANAGEMENT OF CAPITAL

In no other field of business management does the factor of uncertainty absorb so much attention as in the investment[1] of capital. It is true that the control of production, the administration of labor relations, and the determination of market policies constantly involve the making of decisions on the basis of evidence which is not sufficient to establish the truth with scientific certainty, but they also involve to a large and increasing extent the application of scientific methods in the elimination of risk. In the investment of capital, on the other hand, it is nearly always the case that the final decision rests on probability rather than on knowledge. The exceptional case is the case where the investor is interested only in securing absolute safety, and disregards considerations of yield, but this situation is very rare. Ordinarily the investor's objective is to get something more than the yield which can be had on absolutely safe investments, and his choice, therefore, rests upon a balancing of the prospective profits against the degree of risk. In this chapter, an attempt will be made to compare the various methods of securing a return on capital with reference to the amount and kind of risk involved in each.

Opportunities for securing a return for the use of one's capital fall into the following general classes:

1. Investment directly in one's own personally-directed business.
   a) Investment in new enterprise.
   b) Investment in extension of the range or volume of business.
   c) Investment to reduce the costs or risks of business to which one is already committed.
2. Repayment of one's own indebtedness (to curtail outgo for interest).
3. Deposit of money with banks, savings institutions, building and loan associations, purchase of insurance, etc.
4. Purchase of securities with a view to obtaining income from interest or dividends.

[1] Except as otherwise noted the term "investment" is used in its original broad sense to designate all methods of putting money into enterprise, without the usual implication of *safety*.

5. Personal loans, made for the sake of interest.
6. Purchase or sale of securities, land, contracts, or commodities, with a view to profit from price changes.
7. Gambling transactions.

Let us examine these types of "investment" with a view to determining the relative degrees of risk which they involve.

1. *The investment of money in one's own business affords illustrations of all possible degrees of risk.*—Investments to start new businesses are nearly always speculative. The very fact that an opportunity has not been developed already usually means that its results are uncertain. As businesses grow older they become less speculative, more and more of their problems having been solved. Nevertheless, numerous risks assail nearly every type of enterprise, and it is not at all certain that business as a whole any more than pays its own interest and wages. Statistics of failures are available in the United States only for *commercial*, not for industrial, agricultural, or public-service institutions; these statistics indicate that the proportion of failures runs from one-third of 1 per cent in good years to nearly 2 per cent in bad years. These figures, however, embrace only failures which cause loss to creditors; if we had data showing the number of businesses which fail to earn fair interest on their capital and wages for their owners the figures would doubtless run vastly higher.

The investment of capital in one's own business may offer an opportunity for investment which is virtually free from risk, when its effect is to provide safeguard against risks already incurred. For instance, when $20,000 has once been invested in the equipment of a plant, $2,500 invested in an additional machine may return much more than normal interest through the addition it makes to the efficiency of the plant, and the risk may actually be decreased by the new investment. After the new investment $22,500 is at risk instead of $20,000 but the probability of total failure in the next season of poor business has been reduced by the increased plant efficiency, let us say from 8 chances in a thousand to 6 in a thousand. Whereas the risk before was mathematically equivalent to a cost of $160 per year, it now amounts to $135.00. The burden of the risk of total failure has been lessened by $25.00 a year, quite apart from the added income which will result from the decreased cost of operation in years of prosperity.

2. *The safest investment is the repayment of one's own debts.*—When a debtor pays off his interest-bearing obligations he makes an investment on which the return is the amount of interest saved. He incurs

absolutely no risk of losing his investment (unless the chance that he might otherwise evade payment be counted as creating a risk in repayment), nor does he run any risk of having his investment return to him and lie idle on his hands. Moreover, he pays no taxes on the investment (unless he was previously getting a deduction from his taxes on account of the debt). An absolutely safe, permanent, and tax-free investment of other types would net him from 3 to 5 per cent; this one will net him 6 or 8 per cent. The reason for this discrepancy is that the creditor's charge for the loan includes a compensation for *his* uncertainty as to whether he will be able to collect his principal; he figures his claim as a more or less risky asset, while the debtor figures his liability as absolute. Thus the repayment of the debts relieves the creditor of a risk without creating a corresponding risk for the debtor. From the standpoint of risk, there is therefore a real social gain in the liquidation of debts. This may, of course, be more than offset by a loss in productivity, if the capital could produce more in the hands of the debtor than in the hands of the owner.

3. *Deposits with financial institutions are usually very safe.*— Deposits of funds with banks, investments through building and loan associations and investment trusts, and the purchase of investment insurance and of annuities, if the institutions are honestly managed, offer an almost perfect assurance of safety, largely because their success depends on the success of a great number and variety of enterprises, some of which will almost certainly fail but the great majority of which will not, unless as the result of a collapse of the present organization of industry. An equivalent diversification of investments would, of course, obtain the same safety for the individual investor if he were able to secure it, but the financial institutions under consideration have the advantage in their ability to pool the resources of a large number of small investors and spread them over a much larger number of different investments than the average investor could include in his list.

Moreover, such institutions are usually conservative in their choice of investments, and frequently are restricted closely by law in their selection. This is true especially of savings banks, which as a result are able to secure only a low return on their investments, but run very little risk. Some advantage is gained also by the specialization of savings bank officers in judging the quality of investments. The chief advantage, nevertheless, is in the better diversification which is gained through the pooling of individual resources. Individuals

whose income is large enough so that they can secure diversification in their investments seldom find it advantageous to use the savings bank.

4. *Investment in securities makes possible minute specialization in risk-bearing.*—Incorporation is a device for making possible, among other things, a more minute specialization in risk-bearing than is possible under the "single entrepreneur" system. The issuance of various types of securities makes it possible for the risk to be divided among a large number of specialists, each of whom takes only a small share in the risk of any particular business, and moreover takes in each business pretty much the *kind of risk* he chooses, some capitalists preferring to take preferred stocks or bonds offering a high degree of safety with comparatively low return, while others take common stocks which offer the possibility of larger return but a larger degree of risk. By varying the proportion of stocks and bonds and by special contract provisions, the risk can be divided in almost as many ways as there are investors.

At the same time incorporation, by bringing in the principle of limited liability, cuts the bond between control and the bearing of risk, and makes it possible for the individual to invest his capital in lines of business concerning whose management he knows nothing, and in which he would never invest his capital if it were necessary for him to learn. This makes possible, of course, a much wider spreading of investments and a corresponding reduction of the individual's risk of loss. This whole subject is well discussed by Pigou:[1]

So long as liability was unlimited, it was often against a man's interest to spread his investments; for, if he did so, he multiplied the points from which an unlimited call on his resources might be made. The English Limited Liability Act of 1862 and its foreign counterparts enabled investments to be spread, without evoking this danger. Now, the spreading of investments obviously means a combination of uncertainties on the part of all investors who hold shares in more than one company. But spreading, on the basis of limited liability, carries with it yet another element of combination. For, in general, each business deals directly or indirectly with many businesses. If one of them fails for a million pounds, under unlimited liability the whole of the loss falls on the shareholders or partners; but under limited liability a part of it is scattered among the shareholders or partners of a great number of businesses. Hence, any shareholder in one business combines with the uncertainty proper to his own business some of that proper to other businesses also. It follows that the range of uncer-

[1] *Wealth and Welfare*, p. 101.

tainty, to which a normal 100 pounds invested in industry is subjected by reason of failures, is still further diminished in amount.

High-grade bonds of industrial and public-utility enterprises offer a high degree of safety, chiefly because of the large margin which usually exists between the income required to meet charges on them and the normal income of the businesses, secondarily because they are usually secured by direct claims on assets of ample value. Here it will be noted that the risk against which the investor is protected is that of a *partial* failure of the business. If there is a complete collapse the charges cannot be met, unless out of accumulated earnings of the past, and ordinarily the assets pledged lose much of their value. All forms of security depend ultimately on earning power, and are subject to the hazards of the business in greater or less degree. But when the interest on a bond requires, say 25 per cent of the anticipated earnings, a shrinkage of 80 per cent in net means only a 20 per cent shrinkage in the amount available for interest, while a 60 per cent shrinkage leaves enough to pay the bondholder his interest in full. A complete failure wipes out the bondholder just as it does the stockholder, unless the investment can be extricated and the assets applied to some other use. The probability of loss is thus roughly calculable on the basis of (*a*) the variability of the earnings, (*b*) the extent of the margin of safety, and (*c*) the degree of specialization of the capital. The same considerations apply to the purchase of real-estate mortgages, and to loans to individuals.

On the other hand, final equities, such as ownership of individual businesses or of common stocks of corporations, have their speculative character increased by the creation of prior liens. In the case cited above, the issuance of bonds sufficient to absorb 25 per cent of net income in fixed charges means that a 60 per cent shrinkage in net income cuts off 80 per cent of the stockholders' return, and a 75 per cent shrinkage wipes it out entirely. The thinner the equity the greater the risk to both parties.[1] Common stocks, however, are always speculative, even if preceded by no prior liens of any kind; for the accumulated assets and the prospects of earnings of any business, no matter how stable, are always changing, and the full weight

[1] That is, provided there is only one prior lien. The bigger the first mortgage bond issue the more the risk of failure to earn the interest, and the wider the relative range of fluctuation of the remainder. Issuing a junior lien bond does not as a rule weaken the first mortgage bond.

of these changes falls on the common stock. Prior liens intensify the risk; they do not create it.

In this connection a distinction may be noted between the customary adjustment of interest rates to risk in the market for long-time loans and in that for short-time loans.[1] In general, commercial money lenders do not make a charge for interest varying with the assumed degree of risk but establish a single rate and classify applications for credit into those which do and those which do not appear safe enough to be graded at this rate. In the investment market, on the other hand, there is an accurate adjustment of the interest rate to the assumed degree of risk, so that in the same market the rate of interest on bonds or other long-time securities varies within wide limits and adjusts itself to very minute differences in the security.[2]

5. *The return to makers of personal loans is increased by the lack of general knowledge concerning the probability of repayment.*—The business of loaning money to individuals and corporations with the expectation of early repayment, as distinguished from relatively permanent investment through the purchase of stocks or bonds, takes a wide variety of forms. Its most important form is the extension of credit to business men by banks, but it also includes the activities of private money lenders, discount houses, and loan sharks, and a vast amount of lending by individuals who are not professional lenders at all. In general it may be said that loans to private individuals and businesses of moderate size are apt to yield a higher return in proportion to the risk of loss than that obtainable through investment in securities. This refers, however, to the risk as estimated by

[1] In the strict terminology of economics, interest contains no element of compensation for risk for the reason that all compensation for risk is treated as profit just as in the return of the business man for his own efforts the compensation for his services is treated as wages and "profit" includes only the return due to risk. In the ordinary language of business, however, this distinction is not observed. Interest is the return paid for capital invested under a control other than that of the owner for a stipulated return (or a charge against one's own capital for the interest which could have been obtained by loaning it out). Commercial interest obviously varies with the estimated degree of risk.

[2] This difference is parallel to that existing between the practice in life and in fire insurance. In life insurance a single normal rate is established and most applications are either accepted or rejected, comparatively little attention being given by most companies to the adjustment of rates for sub-standard risks. In fire insurance, on the other hand, there is an adjustment of the risk premium to almost every conceivable degree of safety.

the comparatively small number of possible lenders who are able to form an estimate on the basis of adequate information. The more widely known are the facts concerning the financial strength and reliability of the borrower, assuming that his record is good, the more closely will the rate he is obliged to pay correspond to the hazards involved in the business in which he is engaged. If the number of possible lenders whom he may approach is small, as is usually the case, he is less likely to obtain a favorable rate, simply because of lack of competition for his business. Moreover, the time risk to lenders is greater in short-time loans than in security investments, not only because the marketability of securities enables holders to withdraw their capital from them more readily, but also because short-term borrowers are more apt than are corporations to be slow in meeting their obligations, and extensions are more apt to be necessary.

Loans secured by mortgages on real estate are generally considered the safest type of personal loan available for the ordinary lender. In most markets these yield a return very high in proportion to the risk of ultimate loss. They lack liquidity, and there is no adequate social machinery for securing a broad market for them. For those lenders who do not need a high degree of liquidity in their investments and are able to assure themselves of the quality of the mortgages offered them, they frequently form the ideal investment. It should be noted, however, that the return on such loans does not fluctuate as much as on most classes of investments, so that in periods of high interest rates other types of investment become relatively more attractive.

Uncertainty as to time of repayment of loans is a source of risk.— The foregoing discussion has reference to the risk of loss of capital resulting from mistakes of investors and managers. Another risk is involved in investments of capital, however, the risk that one will not be able to get his capital back at the *time* he wants it even though the investment be perfectly good. From the standpoint of the debtor there is a similar risk in the possibility that he may be called upon to repay the loan at an inconvenient time. Every commercial crisis results in numerous financial embarrassments, arising on the one hand from unexpected failures to secure renewals of loans which have been counted on by debtors, and on the other hand from the failure of debtors to furnish promptly the funds which have been counted on by creditors. It is obvious that this risk, which for convenience we may call *time risk*, cannot be entirely eliminated so long as we employ a

credit system, for if debtors are secure against having to repay advances at inconvenient times, creditors cannot at the same time be secure against the risk of failure to collect when they need the funds.

All that can be done is to adjust the interest rate to fit the distribution of the risk. This is done in various ways. In ordinary bank deposits the time risk is all on the borrower—the bank must repay the loan on demand. Consequently depositors can expect little or no interest on their balances. In the case of a callable bond, i.e., a bond which may be called in for payment at any time the issuer chooses to do so, on the other hand, the time risk is all on the lender. So great is the advantage which this gives the borrower that callable bonds cannot be sold at ordinary rates of interest except by making them callable at a price somewhat above par. Ordinary call loans[1] can be terminated immediately at the option of either party. Such contracts exhibit the greatest variation in interest rates. Sometimes the condition of the market is such that the callability of the loan makes it very desirable from the lender's standpoint, and call rates are very low. At other times the demand for such loans far outruns the supply and the rate runs up to figures never approached in any other type of loan. In long-time loans, such as bonds and mortgage loans, the contract cannot be terminated by either party without the consent of the other. Time risk is divided. Here again, as in the case of call loans, the rate charged depends on the condition of the market. Usually a large number of lenders prefer to carry the risk of wanting their money before they can get it rather than the risk of having it repaid before they want it on their hands. Consequently the rate on long-time loans tends to be low. When rates are expected to rise, however, the time risk is considered heavier from the lender's standpoint on the long loans and from the borrower's standpoint on the short loans, and rates on long loans are apt to be higher.

Incorporation and the stock exchange make possible great reduction in this sort of risk. By investing in a bond or share of stock which has a continuous market, the investor can gain most of the advantages of freedom from time risk which are afforded by call loans, while at the same time the issuing corporation is free from the inconvenience of sudden and unexpected calls for the return of the capital which it is using. Of course, the investor pays for this advantage. A security which is readily marketable will sell at a higher price, or,

[1] Such loans are common in this country only in the financial district of New York City.

to state the same thing in another way, will yield a lower rate on the investment. Hence it is important for the investor to consider before buying a security whether he really needs the advantages of marketability. If he does not, it is a waste of money to pay for it.

6. *Speculation on changes in prices is always risky.*—It is easy to draw a distinction between "speculation" and "investment," but it is impossible to define the terms with such accuracy that they shall never both be applicable properly to the same transaction. Colloquially the terms are used to indicate *degrees* of recognized risk and no sharp line is drawn between them. The one shades off imperceptibly into the other, and there is a wide area of common ground along the border. Nor can we draw the line sharply so long as we seek an external test in the form of the transaction or the character of the enterprise. The only clear-cut distinction is a distinction as to the purpose: Is the transaction intended to obtain *only* a payment for the use of capital invested in an enterprise, with the outcome fully known and fully taken account of, or is there an attempt to realize an economic profit—to get more in return than we could if all parties to the transaction, actual and potential, were certain of its outcome? In practice pure investment in this sense is rare; nearly every investor tries to combine safety with some degree of profit.

Investment and speculation, whether in land, contracts, commodities, or securities, involve much more exclusive attention to the problem of risk reduction than do most types of business activity. From the "shoestring" speculator, who tries to make a living without work by guessing the hourly fluctuations of the Curb price of an oil stock, to the president of a trust company, who shifts the proportion of railroad bonds and short-term paper in his holdings in accordance with his judgment of the future course of the interest rate, the whole army of investors and speculators are engaged in *risk bearing;* that is, in an attempt to profit by the uncertainty in other men's minds and to get a better return for the use of their capital than they could if those from whom they buy and to whom they sell had as good knowledge of the present and as good judgment of the future as they themselves possess.

Success in all these lines depends on ability to forecast price changes, which in turn depends upon ability to weigh the importance of complicated and conflicting indications of the movement of demand and supply, not with absolute accuracy, but *with greater accuracy than someone else does it.* All speculation on the price of *anything* is

essentially a contest. For we cannot buy except at a price at which someone else considers the commodity or security a good sale, and we cannot sell except at a price which someone else considers to offer value for his money. Whatever the price is, that price represents the consensus of market opinion at the moment as to what the price ought to be, and the attempt to make a speculative profit is a matching of one's knowledge, judgment, skill, and luck against the composite judgment of the world. Risk is not merely incidental to this type of enterprise; it is of the essence.

For this reason all speculative activity is often condemned by moralists as a species of gambling. *Speculation is not a form of gambling; gambling is a form of speculation.* All forms of speculation are attempts to secure profits, to get for the service of one's capital (or labor) more than they are worth; that is, more than they would be worth if the relevant facts were generally known and account taken of them.

7. *Gambling is speculating on artificial risks.*—The only thing which differentiates gambling from "legitimate" speculation (hereafter referred to for brevity's sake as speculation) is that in speculation the risks are inherent risks of industry, and must be borne by someone if production is to go on. The speculator who buys a carload of sugar and holds it for a rise carries a risk which *he* need not carry, but which someone must; the more efficiently he judges the trend of the market, the less will the price fluctuations be. One speculator gains what another loses, but the gain of the first does not *cause* the loss of the second.[1]

In gambling, on the other hand, nothing of this sort is true. The risk is an artificial risk, created by the gambling transaction itself. Risk is increased for the sake of the risk and for the sake of profiting by one's luck and skill at the expense of another. The losses of the unsuccessful are not compensated for by any gain to themselves, except the direct utility of the excitement.

[1] Indeed it tends slightly to decrease it. If A buys at the bottom and sells at the top, his operations make the bottom a little higher and the top a little lower than it would otherwise have been, and so reduce the losses of B, who buys at the top and sells at the bottom. However, it should be noted that this analysis of speculation is partial. Certain risks are increased by the fact that speculators have an interest in concealing the true situation from one another. Moreover, the inflation of the volume of trade through short sales multiplies the points at which risk appears. The whole question will be discussed more fully in a later section. See chap. xviii.

Except for the few who possess superior information concerning the probabilities of a favorable outcome, gambling enterprises involve a greater risk than is justified by the chance of profit.—We are not concerned at this point with the sporting type of gambler who engages in betting as a form of recreation and counts his losses a fair payment for the amusement he receives. Nor are we concerned with the professional gambling-house keeper who runs his game squarely and obtains his profit from a "percentage" in favor of the "house." He is a business man engaged in selling amusement for a price, and so long as he plays the game squarely and the odds in favor of the house are known to his patrons, they have no cause to revile him for their inevitable final misfortunes. Finally, we are not concerned with the "gambler," professional or otherwise, who creates a probability in his own favor by cheating. As in any other type of dishonesty, the man who is skilful is likely to find that the risks of his business and the social disapproval with which it is affected serve to keep down competition and make his profits relatively large. The point at issue here is the financial soundness of true gambling transactions, that is, of the staking of money on events whose outcome is uncertain, as a method of securing income.

In such cases the gambler's decision to risk his money on a certain outcome is determined by a consideration of the odds offered as compared with his judgment of the relative probabilities of the alternative possible outcomes. Gamblers as a class cannot win, but the individual gambler whose judgment is better than the average of the group whose decisions determine the odds is sure to make money in the long run; provided, first, that his stake in any one transaction is so small that no accidental adverse run cripples him; and, second, that he resists the temptation to enlarge his scale of operations after each successful venture and decrease it after the unsuccessful one. As a matter of fact, the probability of a given individual's attaining success in an effort to make money continuously out of gambling transactions is of very much the same sort as his chance of making money by taking advantage of any kind of price fluctuations. In the one case the prices, in the other case the odds, are the result of a composite judgment of the entire group of persons who are trying to profit by their forecasting skill; in each case success depends upon one's *relative* ability to form a correct judgment as to the probability of a given outcome, relative that is to the ability of the rest of the group to form similar judgments. So far as the kind and degree of risk

are concerned, the respective chances of the man who takes "flyers," trusting wholly to his luck, the man who relies on the current gossip to obtain a basis of judgment, and the man who bases his operations on a careful study of all available information, are about the same in the wheat pit, the land market, the stock exchange, and on the race track. In each case, in the absence of "inside information" or of some method of controlling the outcome of the event, risk even to the most careful student is very great, while the chances of the average man's attaining consistent success are negligibly small.[1]

QUESTIONS

1. Are losses smaller in a diversified list of investments? Is risk less?
2. "Gambling is a form of speculation." Explain.
3. What is the character of the "time risk" in a purchase of real estate mortgages? in a purchase of well-known speculative stocks? in a purchase of a life annuity?
4. Explain the relationship between limited liability and the diversification of investments.

[1] Attention is given to the social and moral aspects of gambling in chapter xviii. The methods used in analyzing the trend of speculative markets are considered in chapters ix and x.

CHAPTER VIII

THE SECURITY MARKETS

As was indicated in chapter vii, the place in our business system where the attention of the profit-seeker is most closely centered on the problem of reducing risk through the elimination of uncertainty is in the field of speculation and investment. For this reason the subject is given detailed attention in this and the following chapters. We will first survey the organization of the securities market and the technical devices used in speculative and investment operations. This will be followed by a survey of the methods used by operators in these markets in deciding when to buy and when to sell, chapter ix dealing with speculative operations and chapter x with those of a more conservative character. Finally, in chapter xi we will examine the speculative markets for commodities, and the methods used in operating through them.

I. THE MARKET FOR OLD SECURITIES

The market for old securities presents the widest variation in character. At the one extreme are the securities of thousands of corporations for which there is no quotable market whatever. The investors who hold the stocks or bonds of these corporations are practically in the position of partners in the enterprises, so far as their ability to liquidate their holdings is concerned. At the other extreme, in marketability, are a dozen or more of the most active stocks which it is possible to buy or sell in lots of anywhere from one to a thousand shares with only a fraction of a per cent's variation in the price. Between these extremes there are all degrees of marketability.

The most conspicuous institution which has been developed for the purpose of facilitating trade in old securities is the stock exchange, and the market for active securities can therefore be understood best through a study of the organization and work of a typical exchange. The New York Stock Exchange will be described in considerable detail for the reason that its activities completely overshadow those of the other stock exchanges of the United States. Other exchanges will be described more briefly.

The New York Stock Exchange is a voluntary association whose purpose is to facilitate the purchase and sale of securities by its members.— The fact must be emphasized at the outset that the Exchange is an organization formed by a limited group of individuals to advance their own business interests. Its principal function is to help its members to buy and sell stocks and bonds with the minimum expenditure of time and labor, and with the maximum amount of relevant information to guide their decisions. Incidentally it renders numerous other services, not only for its members but for the public, but these other services are supplemental to, rather than independent of, its principal business. The Exchange itself does not buy nor sell securities, nor, except in rare emergencies, does it place any restrictions upon the prices at which trades are made, or influence them in any direct way. It is not its business to direct the flow of investment, nor to furnish the public with a barometer of prosperity, nor to protect speculators from their own folly or investors from the dishonesty or incapacity of the managers of their property.

More specifically, the Exchange's functions are the following:

1. It furnishes a place of meeting for traders.

2. It prescribes standard types of contract and rules of interpretation, the provisions of which are implied in all trades made on the floor of the Exchange; and provides rules for conducting its business in an orderly way.

3. It regulates the business methods of those of its members who are engaged in brokerage.

4. It provides facilities for "clearing" trades, thus reducing the labor of delivery of securities and payment for them.

5. It furnishes an elaborate equipment for obtaining and disseminating information.

6. It attempts to influence legislation and the growth of public opinion in ways favorable to the interests of its members, and combats the activities of "bucket shops" and other agencies which tend to injure or discredit the business of legitimate brokerage, investment, and speculation.

1. *The Exchange furnishes a meeting place for traders.*—The provision of a place to carry on trade is perhaps the most important, as well as the earliest, function performed by an organized exchange. In an early stage of the development of a security market, brokers, dealers, and private investors can get in touch with one another by correspondence, by advertising, or by making the rounds of the

financial district in person. Telephone and telegraph also still serve even in the largest markets to make possible an immense volume of trading without the use of an exchange. As the number of professional brokers in a city increases, however, it becomes desirable for them to get together for a part of the day to match their orders. A large office or the lobby of some convenient hotel may serve for a time as a meeting place. In New York the Broad Street Curb served for many years as a meeting place for dealers in certain stocks (see below, p. 147), while the original meeting place of the New York Stock Exchange was under a tree in Wall Street. Increasing numbers made it necessary in New York, as they have at many other points, to adopt some formal organization to share the responsibility and expense of maintaining a regular meeting place.

2. *The Exchange exercises control over trading.*—Once the practice of meeting to trade is begun, it becomes necessary immediately to regulate to some extent the trade carried on in the common place of meeting. Hours of trading are prescribed, and penalties fixed for trading in listed securities outside these hours. On the New York Exchange, the present hours are from ten to three (on Saturday from ten to twelve), and outside trading (in listed securities) is punished by fines. The object of the penalty for outside trading is twofold: first, it insures to every member a fairer chance at other members' offerings, and second, it restrains the severity of competition between brokers.

The manner of executing trades is regulated in some detail. The standard unit of trading is 100 shares, and all bids and offers are understood to be for that amount, unless otherwise specified. Moreover, anyone who makes a bid or offer for a larger amount must accept a trade for 100 shares or any multiple thereof smaller than his offer. Offers not otherwise designated are understood to be "regular way," that is, delivery and payment to be made on the next business day, except that deliveries on Friday trades are made on Monday. Trades may be made also for "cash," that is, delivery and payment same day, or "seller three," "seller thirty," "buyer sixty," etc., which means that the seller has three, thirty, or sixty days within which to make delivery, or the buyer to call for delivery, as the case may be. Such dealings are not frequent.[1]

[1] During the early days of the Great War a great many sales were made "seller thirty" in order to allow time for importation of certificates.

"Wash sales," that is, trades where the buyer and seller are identical, are prohibited, but the prohibition is difficult of enforcement, for the broker has usually no way of knowing whether his principal is also trading through another member. "Cornering" and other obvious ways of establishing an artificial price are also prohibited. All offers must be open for acceptance by any other member.

3. *Relations of brokers with customers are regulated.*—The most important rule governing the relations of brokers and their principals is the stringent rule against cutting commissions, the object of which is obvious. There are also rules requiring the broker to make good to clients the losses resulting from errors on the broker's part, and from failure to obtain the proper execution of orders; rules prohibiting the filling of orders from the broker's own stock, and similar regulations designed to maintain the reputation of the Exchange as a home of fair dealing.

4. *Delivery of stock is simplified.*—The delivery system of the New York Stock Exchange is one of the most efficient in the world. Its operation in brief is as follows: Since delivery of stock must be made daily, it is impossible for all transfers of ownership of active stocks to be recorded on the books of the issuing corporations. Stock certificates are transferable by indorsement, and in the case of active speculative securities certificates issued in the name of brokerage houses and indorsed in blank are frequently exchanged by mere delivery of the certificate. In the case of dividend paying stocks, this results in the dividends being paid to houses which are not the actual owners of the stock, and it is the business of the broker who owns stock at the time it "goes ex-dividend" to collect the dividend from the one to whom it is paid. In the case of non-dividend stocks, no inconvenience results from leaving the stock in "street name," and frequently the stock is so left even when bought by investors and taken out of the market.

The most important device for reducing the labor connected with the delivery of stocks is the Stock Clearing Corporation. This organization functions in two branches, known respectively as the night-clearing and the day-clearing branches. The night-clearing branch receives from brokers reports of the stock bought and sold during each trading day, and makes up a schedule of deliveries so that settlement can be effected with the minimum of labor. Thus, if A has sold a certain security to B, and B to C, and C to D, A may be directed to deliver the security direct to D. D will then make

payment to A at an arbitrary settlement price which is established each day as a basis for that day's settlements. If in the foregoing illustration A has sold, say, Southern Pacific stock at 90, B at 91, and C at 92, and the "settlement price" is 93, A will deliver the stock to D and collect $93 a share. The differences between the contract price and the clearing price are settled between the clearing members and the clearing corporation. A, having sold at 90 and collected $93, will owe the clearing corporation $3 per share B, having bought at 91 and sold at 92, will have a claim on the clearing house for $1 per share. C, likewise, has a claim for $1 per share and D, having bought at 92 and made payment at 93, has a claim to $1. The clearing house, therefore, collects $3 from A, and pays $1 to each of the other three. Thus, a member who has bought and sold the same amount during the day is relieved of all responsibility for delivery and payment except the collecting of profits or the payment of losses, and an enormous saving of labor in the certification and payment of checks is effected.

Systems substantially the same as this are used in most of the stock exchanges throughout the country. In New York, however, a unique feature was added in 1920, a second clearing system, known as the day clearing, for settling the balances due between traders who accept and deliver stocks. Thus, in the foregoing illustration D owed A a balance of $93 per share on delivery of the stock. Quite probably, however, A owed a similar balance to E on other transactions, E to F, and F to D. By reporting to the clearing house the balance due and paying in, or drawing out, the net balance of payments, a second material reduction of the labor connected with check certification and deposit is effected. This second operation is worked out during the day following the delivery in the morning of stocks which have been bought and sold the previous day. This secondary clearing operation is unknown in the lesser stock exchanges of the country.

5. *The Exchange assists its members in securing information.*—The Exchange's service in providing its members with information consists chiefly of two activities, namely, the quotation service and the requirement of publicity from corporations whose securities are listed. The quotation service has been described as follows:

In among the posts are four "pedestals," each bearing the regulation "ticker" and a telegraph key. These are the sending stations of the great ticker service that records in brokers' offices and banks all over the country

each sale of stock as it is completed on the New York Stock Exchange. When the Exchange has opened, we shall see scattered about the floor uniformed attendants, each wearing on his cap a broad gold band and a plate with the word "reporter" on it. At intervals, more or less frequent as business waxes and wanes, the reporters converge upon the pedestals and hand to one of their number at the telegraph key slips on which they have hurriedly penciled the particulars of sales which they have just heard made in the crowds about the different posts. Briskly the reports they bring in are "pounded out" by the man at the key, and back they dart to eavesdrop again. In two rooms on the top floor of the building is to be found the next stage in the ticker service. One is occupied by the New York Quotation Company, which is controlled by the Stock Exchange, the other by the Gold and Stock Quotation Company, a subsidiary of the Western Union. The first supplies the reports of the transactions on the Floor to the offices of members of the Exchange below Chambers Street; the second to all the other tickers in New York and in fifty cities throughout the country.

In each room sit two groups of men, one active, the others in reserve. There are five men to a team. One sits before a round disc studded with red and white push-buttons lettered and numbered like the keys of a typewriter. The other four sit around him, each with one ear close to a telegraph sounder in its wooden box. The wires to each sounder are the wires coming from one of the four pedestals downstairs. As first one then another of the instruments chatters out a metallic message of some sale on the Floor, the central operator's hands with their long, facile fingers spell out the message again on the buttons before him. He has taken the message "by ear," as he regularly does in dull times when selling is slow and only one sounder speaks at a time. But the listening operator whose instrument has spoken also writes the particulars of the sale on a slip of paper and sets it before his partner. In quiet times this is only necessary in order to help the sending operator in checking his work. On busy days, however, it saves him from the impossible task of listening to four instruments at once and disentangling their dots and dashes.

As he spells out each sale on the red and white buttons the ticker on the table before him prints on the tape the record US $57\frac{7}{8}$ U $145\frac{5}{8}$ K 500.20 Pa 108 BO 200.97 K 20 R $16\frac{5}{8}$ U $145\frac{3}{4}$ MP $31\frac{1}{4}$. As we watch the record grow on the marching tape we know that on just such a tape at precisely the same instant in 500 offices precisely the same record is being printed. In the next room the same process is sending the same word to probably ten thousand offices and banks in fifty cities and towns of the country.

Like the winking blackboards on the walls downstairs, these rooms, with their staccato sounders and the nimble fingers of the operators playing on their parti-colored discs, seem symbolic too. They remind us that every transaction on the Floor, every purchase, every sale, is known to the

public hardly more than an instant after it is made. It is little exaggeration to say that a sale of stock is reported all over the city before the brokers who take part in it have had time to record it on their pads. The reporter hears the offer, catches the word "sold" or sees the gesture which closes the transaction, walks twenty feet across the Floor to the nearest pedestal and taps out the report on the telegraphic key. Upstairs the operator at the disc catches the message "by ear," spells it out on the buttons, and before the buying and selling members have gathered themselves together for the next trade the ticker in every broker's office in the Street has printed the fact on the tape.

In busy times the ticker does fall behind the market, but on an ordinary day it is not behind at all. The swiftness of the electric current and the rapidity of the trained workers who bridge the gaps in the circuit keep the ticker service well abreast in the market. The man who has given an order to his broker to buy 500 Steel at 60, if he only stays near a ticker can know when the market has reached his price, and his stock presumably been bought, much sooner than, if he were buying a dozen eggs, the grocer could have them wrapped up for him.

The Stock Exchange does its business in the open. The public knows what has happened there just as quickly as the members on the Floor. No trades are concealed; no news of trades delayed; no prices made or broken without instant word going to every part of the land. Of course this is not to say that the reasons for each sale, the forces behind it, the meaning of each movement in price, of each "bulge" or "break," are transmitted to the public. They are not known even to the members themselves except by inference and deduction and guesswork. The Stock Exchange no more than any other organization of men can penetrate the individual mind and heart and determine infallibly and instantaneously why the individual performs a given act. How, then, can it tell the public *why* a certain thing happens and *what* the happening portends? But it can tell the public just what does happen, and it does so with astonishing suddenness. It is hard to see how a more complete and instantaneous mechanism for spreading broadcast the news of the course of business in a given field could be devised. What the Stock Exchange does the country knows, and knows it the next moment.[1]

It may be added that the Exchange's control of quotations is used not merely to enable it to furnish a valuable service to its members, but also as a source of considerable revenue and as a means of controlling certain activities of individuals not members of the Exchange. For though ticker privileges are sold to non-members, the

[1] Adapted by permission from H. Howland, "Gambling Joint or Market Place," *Outlook*, June 28, 1913, pp. 423–25.

Exchange retains the right to refuse quotation to bucket shops[1] and others whose use of the quotations is calculated to bring discredit on the business of the Exchange.

The other chief means of securing information for the benefit of members and their clients is found in the rules governing the listing of securities. The Stock Exchange maintains a committee on stock listing, whose business is to receive and consider applications for placing securities on the list and make recommendations concerning them to the governing committee, or in the case of certain high-grade securities, to list them without reference to the governing committee. The requirements for listing are extremely strict. The corporation applying for the listing of its stock must file a statement showing, in addition to the ordinary information concerning its charter, form of capitalization, and field of business, complete details concerning its financial structure and financial strength. This includes such detailed information as:

A. Voting power of obligations of debt.

B. (1) Purpose of issue; (2) application of proceeds; (3) amount issued for securities, contracts, property; description and disposition; (4) additional property to be acquired.

C. Tabulated list of constituent, subsidiary, owned, or controlled companies showing (*a*) date of organization; (*b*) where incorporated; (*c*) duration of charter; (*d*) business, and (*e*) capital stock issues (by classes), par value, amount authorized, issued, owned by parent company.

D. (1) Mortgage, and (2) other indebtedness, (*a*) date, (*b*) maturity, (*c*) interest rate, (*d*) redemption by sinking fund or otherwise, (*e*) amount authorized, and (*f*) amount issued; (3) similar information regarding mortgage and all indebtedness of constituent, subsidiary, owned, or controlled companies.

Other liabilities in detail, description of property owned in fee, controlled, or leased.

Policy as to depreciation.

Output or production for the preceding five years, dividends paid, income account, balance sheet, and similar accountings for predecessor, constituent, subsidiary, owned or controlled companies and corporations recently consolidated.[2]

The corporation must also agree not to dispose of its stock interest in subsidiaries, except under existing authority or on direct authoriza-

[1] A bucket shop is an organization posing as a commission house which executes fictitious trades for customers, paying them their profits or pocket ing their losses

[2] Adapted from *Rules of the New York Stock Exchange*, reprinted in J. E. Meeker, *The Work of the Stock Exchange*, pp. 577 ff.

tion of stockholders, to publish at least once a year an income account and balance sheet, to maintain a transfer and registry office in New York City, to notify the Exchange of any change of capitalization, to publish promptly any action in respect to interest on bonds, dividends, or allotment of rights, and to have on hand at all times a sufficient supply of certificates to meet the demands for transfer.

These provisions are intended to secure adequate publicity for the business of the corporation, and to enable investors to form an intelligent estimate in regard to their value. The provisions controlling the listing of new securities are much more adequate for this purpose than are the provisions controlling corporations whose stocks have been listed. Once the securities of a corporation have been placed upon the list, the Exchange, as a matter of fact, exercises very little supervision over the management of the business, so long as investors are notified promptly of the declaration and passing of dividends, issuance of rights, suspension of interest payments, and similar necessary data. Even the requirement that an annual income statement and balance sheet be published is not rigidly enforced, though nearly all corporations whose securities are listed do, as a matter of fact, publish this information.

Control of the Exchange is highly centralized.—The Stock Exchange is controlled by a Governing Committee of forty members together with the president and treasurer of the Exchange. This committee has practically absolute power not only to lay down rules for trading but to discipline members by fines, suspension, and expulsion. Subordinate to the Governing Committee are a number of special committees composed of members of the Governing Committee and appointed by it to manage special departments of the work. For example, the management of the Stock Exchange Building is in the hands of the Committee on Arrangements, and the giving out of quotations is controlled by the Committee on Commissions and Quotations.

It has frequently been suggested by outside critics that the Stock Exchange should be incorporated in order to bring it under a larger degree of governmental control. This suggestion the Exchange has steadily resisted. The Exchange authorities deny that the public would gain from such incorporation any valuable powers of control which it does not already possess. On the other hand, they fear that incorporation would tie the hands of the Governing Committee in matters of discipline, and make impossible prompt action in closing

the Exchange on occasions of public disturbance, in regulating prices of cornered stocks, and in similar cases of emergency. The experience of the Chicago Board of Trade, which is incorporated, does not indicate that incorporation would be likely to have any important effect either for good or for evil.

The membership of the Exchange includes specialized groups.—As was noted above, membership in the New York Stock Exchange is limited to 1,100 members. The only way, therefore, that a new member can be admitted is through a transfer of the membership of some-one else. The "seats" are regularly bought and sold, fluctuating in value with the volume of speculation. During the war boom, seats in the New York Stock Exchange sold as high as $115,000. Purchasing a seat, however, does not of itself entitle one to a membership, as the Committee on Memberships scrutinizes every candidate's qualifications with great care, and individuals whose record either for reliability or for financial strength is unsatisfactory are quite often rejected.

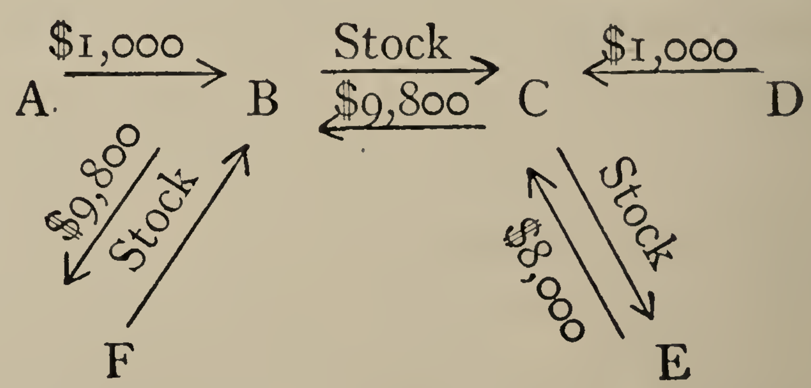
The membership is made up chiefly of the following classes: (1) partners in commission brokerage houses; (2) "two-dollar" brokers; (3) "specialists"; (4) dealers in odd lots; (5) professional speculators; and (6) inactive members. A survey of the work of these classes of members will serve to bring out most of the essential features of the organization and work of the Exchange.

1. *The commission brokerage house buys and sells stocks and bonds as the agent of outside investors and speculators.*—It is always unincorporated, sometimes individually owned, more often a partnership. A large brokerage concern usually has memberships in all the important exchanges. Officers are maintained in leading cities all over the country, and private wire connections established between them.

The chief asset of a commission house is its list of customers. Its chief income is the commission it obtains for executing trades, either upon the exchange floor or elsewhere. The commission for executing trades is 15 cents per share for stock selling from $10 to $125 per share; 7½ cents per share below that figure and 20 cents per share above, and $1.50 per $1,000 for bonds. For this commission the broker attends to all the details not only of executing the trade but of delivery, payment, and transfer on the books of the issuing corporation, and also furnishes its customers and the public generally with a large amount of service, for which it is not directly paid. Many houses maintain customers' rooms in which quotations are posted on blackboards as fast as they are received from the Exchange. Financial

journals and manuals and other sources of information are kept available, and advice is freely given on the customer's investment or speculative problems. In addition to this, the commission brokerage house regularly undertakes the responsibility of financing its customers' purchases, exacting a "margin" of from 5 to 40 per cent of the amount, and furnishing the rest of the capital itself or borrowing it from banks.

Facilities are also offered for executing what is known as a "short sale."—This is a sale of stock which the customer does not own but which is borrowed for him by the broker for delivery, the loan being repaid when the stock is bought at a later date. The financing and executing of such transactions may be illustrated by the following diagram:



A and D are speculators, and B and C their respective brokers. A orders B to "sell short" for him 100 shares of Southern Pacific stock, posting about $1,000 as margin. B sells the 100 shares at $98 each to C, who represents D, a speculator desirous of purchasing 100 shares of Southern Pacific. D usually posts with C $1,000 as margin. Delivery and payment must be made the next day. In order to make delivery, B borrows 100 shares of Southern Pacific from F, posting with F the full $9,800 as security, and delivers the stock to C, collecting from him $9,800. C then posts the stock with E, a bank, as collateral for a loan of say, $8,000, advancing the balance out of his own funds. Usually B collects from F interest on the $9,800, which is posted with him as collateral for the loan of the 100 shares of stock. D pays interest to C on his unpaid balance of $8,800 and C, of course, pays interest to E on the $8,000 which he has borrowed. Usually C and F pay the call loan rate, while D pays a customary rate which does not fluctuate as often as the call loan rate but averages somewhat higher. In case a dividend is declared on the stock while the short trade is open, both D and F are entitled to receive it. Hence A must make good one dividend, the company, of course, paying the other.

The advantage of the transaction to F is that he is enabled, through loaning his stock, to borrow on it up to 100 per cent of its face value; whereas through a bank he could probably not borrow more than 70 or 80 per cent. A may close out the transaction at any time by ordering B to purchase stock in the open market and deliver to F in repayment of the loan. D also may close out the trade at any time by ordering C to sell the stock in the open market. In case F desires the return of his stock before A wishes to purchase, it is B's business to borrow the stock elsewhere. In case the stock cannot be borrowed, B must "cover the sale," i.e., buy the stock in for A's account. Most brokers will not execute orders for short sales except in securities which have a large floating supply, so that the risk of being compelled to "cover" in this way is small. In case of a scarcity of stock for loaning purposes, the interest rate paid by the lender of stock will go below the usual call rate. Sometimes the lender of stock is enabled to get the use of the money for nothing, in which case the stock is said to loan "flat" and occasionally a premium is paid for use of the stock in addition to the waiver of interest.[1]

In practice, of course, C does not negotiate a separate loan at the bank for every margin trade his customers may make. What he does is to borrow on the mass of securities in his possession as much money as he needs to take care of his customer's demands. Most brokers carry their customers on smaller equities than do the banks, so that the broker has to advance part of the funds on his own capital. Some, however, pursue the opposite policy, requiring margins so large that they can secure larger loans from the bank than they make to their customers. The purpose of the margins is, of course, to protect the brokers against adverse fluctuations in the price of the stock. In the illustration above, if, while A is still short, the price of Southern Pacific advances, B must have some protection in his obligation to return the stock to F on demand. Even if he is not required to return the stock he may be called upon to post additional money for F's protection. In case the advance in prices is large, A will be called upon to post additional margin, and if he is unable or unwilling to do so, the stock will be bought in the open market and delivered to F in

[1] For instance, the following quotations were published on April 7, 1921: "Crucible, 1–16 per cent premium; American Sugar, B.R.T., D.&H., Maxwell, Penna., flat; L.&N., 2; American Smelting, Anaconda, Baldwin, Bethlehem B., General Motors new, Alcohol, M.P., Food Products, U.S. Rubber, U.S. Steel, 6; Atchison, B.&O., C.P., C.&O., St. Paul, R.I., Erie, Marine common, Marine preferred, N.H., Central, N.P., Reading, S.P., Studebaker, U.P., 5 per cent."

repayment of the loan, and the loss charged to A's account. In case a sudden change of market makes it impossible for the broker to sell the stock at a price which protects him, or, in other words, in case the loss is greater than the margin A has posted, B has a valid claim against A for the additional loss. D's margin protects C against a decline in price just as A's margin protects B against advance.

The volume of exchange trading is very great.—The way in which such transactions as those described above make possible an enormous volume of trade through the rapid turnover of a comparatively small amount of stock has been described as follows:

The process is very simple, once you get it clear. We take a simple case. Suppose A has 1,000 shares of Bethlehem Steel. He may be carrying it for a client. Anyhow he has it—the actual stock. Let us suppose that he is carrying it for a client, and has hypothecated it along with other stocks for a loan at his bank. Now a speculator wishes to sell Bethlehem Steel for a fall, that is, to sell it short. He has no stock, but he knows he can borrow it. Men at the Bethlehem Steel post are bidding for it. One who shall be C bids 150½ for 1,000 shares, and B cries "Sold!" That goes out on the ticker instantly—1,000 shares of Bethlehem Steel sold at 150½ and you might suppose that so much actual property had changed hands, like real estate. But the seller, remember, had no Bethlehem Steel Stock to sell. He may never have owned a share in his life. But all the same he must deliver 1,000 shares to C.

After the close of the day's trading there is a "loan crowd," where all active stocks are borrowed and loaned. B, the speculator, shouts: "I want to borrow a thousand Bethlehem." And now A appears. He has 1,000 shares of stock hypothecated at the bank, and he agrees to lend it to B. They exchange memoranda. So now A gets his 1,000 shares of Bethlehem Steel back from the bank (either by paying the money he has borrowed on them there or substituting other collateral in their place), and delivers the stock to B in exchange for a certified check of $150,500. B delivers this borrowed stock to C, to whom he sold it, and receives from C a check of $150,500 in payment for it.

The actual stock is now in possession of C, who hypothecates it at his bank. The next day another speculator, who shall be D, in like manner as B, is moved to sell 1,000 shares of Bethlehem Steel stock for a fall. He sells it to E, borrows it from C and delivers it to E. Now three people have title to 1,000 shares of Bethlehem Steel stock, namely, (1) A who had it first and loaned it to B, (2) C who bought it from B, and (3) E who bought it from D. Actually only 1,000 shares of real stock have figured in these transactions, but 2,000 more have been bought and paid for. This may go on and on so long as nothing unexpected happens.

If the price falls the speculators who have sold it short and borrowed it for delivery return it to those from whom it was borrowed. If it falls, for example, to 140½, B buys 1,000 shares at that price, for $140,500, sends the stock to A from whom he borrowed it, and gets back his own original $150,500. The difference is his profit. If the price rises, the short sellers buy it in the same way and return it to those from whom they borrowed it, but they do it in that case at a loss, because the stock they buy is worth more than the stock they borrowed.

The unexpected does sometimes happen. A number of people may have been lending the stock over and over to short sellers, intending all at once to demand the return of it in a concerted manner. The speculators are deceived by the willingness with which the owners lend it and deduce from that that the supply is ample. But all at once the lenders call for the return of the stock and the borrowers, unless they can find other owners who will lend, are compelled to buy the stock in the open market at a loss.

So corners are contrived. Speculators are beguiled to sell what they do not own, because they think it will fall and can be bought cheaper tomorrow, and the stock with which to make their deliveries is loaned to them by manipulators who may know all the time approximately how much real stock there is in the floating supply. When the ratio of contracts to actual stock is very high they call suddenly upon the borrowers to produce it. As it cannot be produced, the borrowers have to settle, that is, they have to buy at any price, and their bidding for it causes wild advances in the price.

In a stock on which speculative interest is centered there is, of course, a great deal of mere "trading" by professional members of the Stock Exchange who seldom receive or deliver stocks at all. They buy and sell the same day, their purchases canceling their sales. One who buys 1,000 Bethlehem Steel at 10 o'clock and sells 1,000 shares at 3 o'clock is "even." The two transactions pair themselves off at the Clearing House afterward. The trader merely sends a record of what he has done to the Clearing House. He owes nobody any stock; nobody owes him any stock. But there is a difference in money to be settled. He may have bought from A 1,000 shares in the morning at 150½, and in the afternoon he may have sold 1,000 shares to Z at 151½. He has made a profit of $1,000; but he neither receives stock from A nor delivers stock to Z. He merely attaches to his Clearing House sheet a draft for $1,000. The Clearing House deals with A and Z. A has sold 1,000 shares of stock at 150½ for which he will receive $150,500 in money. Z has bought 1,000 shares of the same stock at 151½, for which he must pay $151,500. The difference is $1,000 and that is the trader's profit. A sold the stock to the trader and Z bought it from the trader, but it is Z who receives it from A. The trader was in the middle, never intending either to receive or deliver stock. The Clearing House sends him $1,000 which is the difference between what A gets and Z pays

for the 1,000 shares of stock. And by these processes mainly is it possible for Stock Exchange "transactions" greatly to exceed the actual amount of a given stock existing in Wall Street.[1]

Large brokerage houses maintain an elaborate system of private communication between their offices in leading cities.—These are called "wire houses." The following is an excellent description of this service:

A large part of all the stock bought and sold in the Wall Street offices of brokerage firms is of course for the account of operators who live in New York. But in addition to this the large brokerage concerns have a remarkably extensive telegraph system whereby orders are gathered from far distant points. The "wire map" of any one of a half-dozen or so of the large houses looks like a complete railroad guide of the United States. One particular firm reaches by private leased duplex wire from its main Wall Street office to such cities as Baltimore, Washington, Charlotte, Charleston, Atlanta, Savannah, Augusta, Jacksonville, New Orleans, Memphis, Chicago, Cleveland, Cincinnati, Omaha, Colorado Springs, Denver, Salt Lake City, Butte, Spokane, San Francisco, Pasadena, Los Angeles, Coronado Beach, and San Diego. It also has wire connections to Boston, Portland, Montreal, Toronto, Detroit, Gary, Indianapolis, Louisville, St. Louis, Kansas City, Milwaukee, St. Paul, and Winnipeg. This particular firm has six branches in the state of California alone. These wires may connect with branch offices or merely with correspondent firms.

The relative importance of this outside business may be judged from the following figures. On two successive days in the summer of 1919, 75,000 and 60,000 shares respectively were handled by branch offices; while 38,000 and 46,000 shares respectively were handled by the main office in New York. The extent of this "outside" participation in New York Stock Exchange speculation is, of course, very much increased in times of active bull markets, such as prevailed in the early summer and again in the autumn of 1919.[2]

2. *"Two-dollar brokers" are exchange members who specialize in the execution of trades for other members.*—They are so called because their commission at the time the name arose was $2 per 100 shares of stock bought or sold. (The present figure is $2.50.) These brokers are of two classes. Some of them form permanent connections with brokerage houses, doing practically all of their floor work. Such a connection is especially valuable to a small house whose exchange

[1] Adapted by permission from "The Phenomena of Phantom Stocks," *New York Times Annalist*, August 2, 1915, p. 127.

[2] Adapted by permission from H. G. Moulton, *The Financial Organization of Society*, pp. 290–91. (University of Chicago Press, 1921.)

member is the proprietor of the business or a senior partner, and whose time is more valuable in the office than it would be on the floor. A large house finds it, as a rule, more economical to have a partner who does the floor work, but small houses often do not have enough floor trading to occupy the entire time of a partner. Other two-dollar brokers are employed by the floor members of brokerage houses to assist them in rush periods, or at times when they have orders calling for immediate attention in different parts of the floor at the same time. This is particularly likely to be the case at the opening of the market, when the trader's book is filled with an accumulation of overnight orders.

It may appear that there is an unduly wide spread between the commission of $15, which the brokerage house charges its customers for buying or selling 100 shares, and the $2.50, which it pays the "two-dollar broker" to do the work for it. It must be remembered, however, that the two-dollar broker has no responsibility to furnish information to customers, maintains no selling organization, keeps no books except his list of open orders and his record of work done, borrows no money from banks or stocks from other brokers, makes no deliveries, and, in general, has no business cares and responsibilities after his rather short day's work is done. On the other hand, the accounting work alone of a large brokerage house is a task requiring the employment of many clerks and bookkeepers, while the annual cost of a private wire between two important trading centers may run far into thousands of dollars. Expensive services in furnishing information are usually provided. It is these outside services, rather than the actual work of making a trade on the floor of an exchange, for which the commission house receives its compensation.

3. *The "specialist" makes a market for inactive stocks.*—The specialist is a trader and broker who devotes himself solely to the execution of orders and stocks traded in at the same point on the floor, sometimes indeed solely to the issues of a single corporation. It is the business of the specialist to make a market at any time for the security in which he specializes. This he does by quoting a "bid and asked" price upon request. If few other dealers are interested in the security in which he specializes and there is little speculative interest in it, he may be able to keep the market for himself while quoting a bid and asked price a considerable distance apart. If so, he makes of course a correspondingly large profit by buying at the bid and selling at the offered price. If the security becomes more

active, he has more competition and must quote prices closer together in order to make trades, thus reducing a profit on a single transaction but presumably increasing the number of his trades. The "specialist" also acts as a "two-dollar broker," handling orders for other brokers to buy and sell his special stocks. In this case he gets the $2.50 commission just as the regular two-dollar broker would get it. He is of course not allowed to act both as a broker and as a dealer in the same transaction, and would be punished by a heavy fine or suspension if caught attempting to do so.

4. *The odd lot dealer handles small orders.*—Another very interesting branch of stock exchange business, as it is carried on in New York, is the work of the odd lot dealer. The standard unit for dealings on the New York Stock Exchange is, as previously stated, 100 shares, and only trades of that size, or of some multiple of 100 shares, are reported on the ticker or closed out through the clearing house. There is however a very large volume of business in less than 100 share lots—some estimates of it run as high as 20 per cent of the total trade. Almost any brokerage house will accept orders for as few as 25 shares for margin accounts and smaller lots for cash sale or purchase, and some houses handle as few as 10 shares in a single order on margin account. In executing these trades, resort is nearly always had by the broker to representatives of a few large houses which specialize in the odd lot business. These houses buy and sell on their own account, making their income out of profits on the trade, not out of commissions. The customer, of course, pays the usual commission. but this goes to the house which represents him, not to the odd lot house. The most frequent way in which such orders are executed is to hold them until the next trade in the round lot market, immediately after which the odd lot man will sell at one-eighth or one-quarter point[1] above, or buy one-eighth or one-fourth below the price recorded. This gives him a profit of one-quarter or one-half point if he is able to make both a purchase and a sale before the "round lot" price changes.

Another method which avoids the delay incident to waiting for a sale is for the odd lot house to buy at the bid price and sell at the offered price (or one-eighth away in the case of inactive stocks). In this case the odd lot dealer makes his profit out of the spread between the bid and the asked price, just as does the specialist.

[1] A "point" is one dollar per share in stock quotations, or ten dollars per thousand dollars face value in bond quotations.

In order to make his deliveries, the odd lot man is frequently obliged to buy or borrow 100 share lots and split them up into fractional lots, remaining "long" of the unused balance if he buys, or "short" of the amount sold if he borrows. This leaves him, of course, exposed to the risk of market fluctuations, but he is able to keep this risk at a minimum by buying part of his stocks and borrowing part of them, so that in case of a market change he will make about as much on the stocks in the one group as he loses on the stocks in the other.

The following is a description of the work of the odd lot dealer:

The stocks traded in on the Exchange are divided by the "Odd Lot" dealer, into two classes, which are known as "eighth stocks" and "quarter stocks." An "odd lot" order in an "eighth stock" is executed at one-eighth point from the next "full lot" sale, or if the client so desires, at the bid or offered price. Orders in "quarter stocks" are executed at one quarter point from the next full lot sale, or one-eighth point from the bid or offer. A large majority of the stocks are "eighth stocks." The "quarter stocks" are either inactive or the price fluctuations in them are at such wide figures that trading on so narrow a margin for profit as one-eighth of one percent would be impracticable to the odd lot dealer, and would not permit him to give the free market in every stock on the list whether active or inactive that now exists for the trader in odd lots.

The firms which deal exclusively in odd lots are represented by as many as twenty-five or more members on the New York Stock Exchange. Each one of these representatives is located in his particular place or station on the Exchange floor and confines his activities solely to the execution of the odd lot orders in the group of stocks assigned to him.

The individual desiring to buy or sell an odd lot gives an order at the office of a Stock Exchange house or to one of its branch offices or out-of-town correspondents with whom he has an account or wishes to open one. The New York Office immediately upon receipt telephones the order to its clerk on the floor of the Stock Exchange who writes it on an order slip and hands it to a Stock Exchange employee in charge of the pneumatic tubes at his booth. It is then sent through a tube to the tube station at the post at which the particular stock is traded in, where it is removed from the carrier by another Stock Exchange employee and by him handed to the odd lot dealer or placed on the odd lot dealer's special clip at his post. If it is a limited order, the odd lot dealer enters it in his book; if it is a market order he executes it, basing the price on the first sale of a full lot that takes place after he receives the order. He then hands the report of the execution of the order to the tube employee who sends it through another tube back to the original tube station; here it is handed to the telephone clerk who telephones it to the office.

Market orders: An odd lot market order is an order to buy or sell a stated number of shares from 1 to 99 at $\frac{1}{8}$ (or $\frac{1}{4}$) away from the price of the next sale of a full lot taking place after receipt of the order by the odd lot dealer. Market orders received before the opening of the market are executed at $\frac{1}{8}$ (or $\frac{1}{4}$) from the opening price. It sometimes happens, however, especially when important news about a stock has come out over night that there will be a wide, or as it is sometimes called "a split opening," when sales at different parts of the crowd occur simultaneously at different prices. For example: U.S Steel might have an excited opening, sales of ten thousand shares taking place immediately upon the ringing of the opening gong at from 80 to 81 and the ticker would report "U.S. Steel 10,000, 80 to 81." A reasonable opening price between these prices would have to be decided on. In this case it would very likely be that the odd lot dealer would buy at $80\frac{3}{8}$ or sell at $80\frac{5}{8}$.

Limited orders: An odd lot limited order is an order to buy or sell a stated number of shares from 1 to 99 at a stated price. For example: An order is given "Buy 10 Reading at 69." That this order may be executed Reading must sell at $68\frac{7}{8}$ or less. If the first sale after receipt of this limited order permits of its execution, the limit is ignored and the order considered a market order. Should the first sale be $68\frac{1}{4}$ the order would be executed at $68\frac{3}{8}$. A limit is also ignored on a limited order if the opening sale any morning permits of its execution while the order is in force. A limited order must be executed at its limit, however, when the next sale after it is received does not permit of its execution. For example: An order is given to "*Buy* 10 *Reading at* 69." If the first sale after receipt of the order is $69\frac{1}{2}$ and the next sale $68\frac{1}{2}$ the order is executed at 69. In this case the odd lot trader secures exactly the price he would have secured had this order been for 100 shares, because his broker would have been bidding 69 and the 100 shares would have been sold to him at 69 on his bid before the stock could sell at $68\frac{1}{2}$.

Stop orders: A stop order is an order to buy or sell a stated number of shares at the market after a fixed price is reached. An odd lot stop order is executed at $\frac{1}{8}$ (or $\frac{1}{4}$) from the first sale of a full lot which makes the stop order operative. For example "*Sell* 10 *Reading* 69 *Stop.*" If Reading sells at $69\frac{1}{2}$ and then at 69 the order is executed at $68\frac{7}{8}$ but if the sale after $69\frac{1}{2}$ is $68\frac{1}{2}$ then the stop order is executed at $68\frac{3}{8}$.

Orders to buy or sell at the close: An order may be given to buy or sell an odd lot "at the close." The execution of these orders is always based on the closing bid and offer and not on the last sale of the day. It would be impracticable for the odd lot dealer to trade on the last sale, as the last sale might occur as early as 2:30 P.M. and this sale, for example, might have been at 69 and the close 68–$68\frac{1}{2}$ or $69\frac{1}{2}$–70. In justice to all concerned therefore an order reading "At the close" must mean, at the closing bid or offer (or $\frac{1}{8}$ away).

These methods for conducting trading in Odd Lots, have been in general use on the New York Stock Exchange for the past forty years.[1]

5. *Floor traders speculate on their own account.*—Professional speculators are not always members of the Exchange, but many of them do find it advantageous to purchase memberships either in order to make their own trades on the floor of the Exchange or in order to secure the advantage of the lower rate of commission which is charged by members executing trades for one another. Those who trade for themselves are usually what are known as "scalpers," i.e., speculators who trade for small profits—an eighth to a half "point" on a trade, and close out their trades quickly if the price goes against them. In this sort of speculation, of course, the trader is governed not by considerations of the investment value of the securities in which he trades but by his judgment of the conditions which affect the market of the immediate future. Consideration will be given to these "technical conditions," as they are called, in chapter ix.

6. *Inactive members are numerous.*—These comprise the office members of certain brokerage houses, who seldom appear on the floor, a few large professional operators who own memberships for the sake of the reduction in commissions which it gives them, and a great many representatives of prominent investment institutions, who make little direct use of their memberships but desire to have some voice in the management of the exchange or find some advertising value in their connection with it.

The "Curb" Market specializes in newer stocks.—Other exchanges in the United States need little description, as they are all much smaller than the New York Stock Exchange, and present no points of difference which are of interest. Until recently a noteworthy exception to this statement was found in the New York Curb Market, the great market place for unlisted securities. This was an informal gathering of brokers who met in the open air on Broad Street, in New York City, and carried on an active trade, largely in mining stocks and the stocks of new corporations. Orders were transmitted by signals from adjacent windows, and quotations were recorded only by newspaper reporters who collected them from various brokerage houses specializing in the Curb trade.

At first the Curb trade was entirely disorganized, anyone being free to trade or refuse to trade with anyone he pleased. An organiza-

[1] Adapted by permission from a pamphlet issued by Carlisle, Mellick, and Company, New York.

tion was formed however for the purpose of introducing some system and responsibility. This organization grew more and more powerful till in 1921 it emerged as a full-grown stock exchange, housed in a splendid building, with ticker service, listing rules, and with the opportunity of trading on the floor restricted to members. A small remnant of the old group remained in Broad Street as the "outside Curb," but this market is at present of slight importance.

The "inside" or regular Curb is made up chiefly of partners of members of New York Stock Exchange firms and constitutes an important feature of our market machinery. In theory its listing requirements are quite as rigid as those of the New York Stock Exchange, but the regulations apparently are not enforced in the same spirit, as a considerable trade is reported in securities of corporations which refuse to publish income statements or other information deemed essential by the older organization. Indeed it is difficult to see the advantage of maintaining the two organizations were it not for this sort of specialization in the class of securities traded in. The Curb serves as a seasoning place where a market can be maintained by stock exchange members without even the qualified indorsement of the securities which is implied in listing them on the larger Exchange.

The Consolidated Stock Exchange is a rival New York organization.—It deals chiefly in the same securities that are traded on the New York Exchange. It has an entirely separate membership, consisting chiefly, though not entirely, of smaller commission houses and private floor traders. The unit of trading is ten shares, and a much larger proportion of the trade is professional "scalping" than is the case in the "Big Exchange." For the most part the prices tend to follow the quotations on the New York Exchange. During the past year (1921–22) the Consolidated Stock Exchange has suffered a considerable loss of reputation on account of a number of failures in its membership. It does not appear, however that there is any inherent weakness in the organization which accounts for the higher percentage of failures among the Consolidated as compared with the New York Stock Exchange membership.

Other American stock exchanges are much smaller than the New York Exchange.—The American stock exchanges outside New York City are chiefly of local importance. In most of them the securities of local public utilities and industrials are apt to be absorbed by the

New York Stock Exchange as soon as they become of national interest.[1]

There is also a considerable amount of specialization by industries, which is only partly accounted for by location. Thus, the Boston Exchange is the great market for copper stocks, though a dozen of the leaders are active in New York; automobile stocks are heavily traded in Detroit; gold-mining stocks in San Francisco and Denver; and public utilities in Philadelphia.

In general, the methods used in the smaller exchanges are less formal, and the requirements both for membership and for listing securities less exacting than is the case in the New York Stock Exchange. The relative importance of the outside exchanges and the New York Exchange may be judged from the fact that the New York Exchange has sometimes handled more stock in a single day than the Chicago Exchange handled in the entire year.

There is a large trade in securities outside the exchanges.—Many stocks of well-known corporations are not listed on any exchange, and many stocks which are listed rarely appear in the published quotation lists, for the reason that no trades are executed in them. This indicates a lack of public interest in the security, but does not prove anything with regard to its merits. Often the inactivity is due to the fact that nearly all the issue is closely held by interests affiliated with the management, or by investors who are not active speculators and cannot be induced to dispose of their holdings except by bidding up the price to an unreasonable level. On the other hand, the lack of interest may be due to the fact that the corporation in question has been so thoroughly discredited that no one cares to buy its stock. Again, it may be because the corporation has done no public financing, and no broker has ever taken the trouble to work up an interest in its securities, so that few people's attention is called to their investment or speculative possibilities.

Whenever a stock or bond becomes inactive, the bid and asked prices draw apart, so that it becomes difficult to buy without running up the price and equally difficult to sell without breaking it. In such cases the exchange method of dealing is not advantageous. Exchange trading really is based on the presumption that, whatever

[1] This is apparently less likely to happen in the case of public utilities. Peoples Gas of Chicago, Pacific Gas and Electric of San Francisco, and Columbia Gas and Electric of Cincinnati are the only outside local utilities which are at all active in the New York market.

the price may be, a slight decline will bring in new buying from brokers who are present and immediately aware of the change, and that a slight rise will bring forth selling. Its foundation principle is continuity. If only one or two brokers are interested in a security at any reasonable price, it is obvious that public bids and offers on the exchange do not constitute an efficient method of establishing sales at a price corresponding to the known facts about the security. Some device is needed for hunting up a second party to accept a given bid or offer. In such cases the most important marketing agency is the so called "over-the-counter" market.[1]

Over-the-counter trading means chiefly trading by telephone and telegraph. Houses handling this kind of business usually cater more to the investment than to the speculative trade, and for this reason bonds are handled more than stocks.

The trader's equipment consists of a set of telephones in the quietest room available, some financial manuals, a card index of securities showing the latest bids and offers, a battery of clerical assistants, a quick wit, and a reputation for fair dealing. When the house receives an order for a bond or share of stock which it does not itself have for sale, inquiries are put out. Sometimes a certain house is known to specialize in securities of the particular corporation in question. If the security was originally underwritten, the house of first purchase will usually "maintain the market" by standing ready to buy or sell at a narrow spread of bid and offered price, and will have on file lists of present holders who are the most likely prospects for either sales or purchases. A house may specialize in the securities of a corporation for which it has done no underwriting, however, particularly if it handles the securities of affiliated interests. If no house is known to specialize in the securities of the particular corporation, it is often possible for the trader to make a deal through a house which specializes in the securities of the whole industry in question.[2] Again, as noted above, trade in certain classes of stocks and bonds is centralized in certain cities, and an order for such securities will most likely be telegraphed at once to some house in that city. In the absence of a specialized center, inquiries will be scattered more or less broadcast, and, in case of an order of large size, rapidly find their way around the United States, Canada, and Europe, each trader passing on the inquiry

[1] In Chicago the over-the-counter market is called the "curb."

[2] See for examples the advertising columns of the *Wall Street Journal* and of the *New York Times Annalist*.

to someone else. The inquiry sometimes comes back to the original inquirer from various directions. This wandering and redoubling may give the appearance of a much more active interest than really exists. Sometimes resort is had to advertising, a few houses regularly publishing lists of securities which they desire to buy or sell, sometimes with, and sometimes without, quotations. In the case of an inactive security, it is not unusual for a considerable difference to appear in simultaneous bids and offers published by competing houses.

Independent brokers also make a business of making the rounds of the larger houses in New York, getting lists of securities wanted, and bringing the trader in touch with others who can supply his needs. Some of these brokers take one side of the trade themselves, and may make a considerable margin by buying in one office at the offering price and selling in another at the bid price. To an increasing extent, however, the business is done by regularly organized "street brokerage" houses, which charge commissions for bringing buyers and sellers together. It is of course illegal to take both a commission and a profit on the same trade.

To a large extent the brokerage work of a large investment house is done for no commission or a nominal one, to retain the good will of customers with whom new issues may be placed. Often, indeed, the placing of a new issue requires that assistance be given the customer to get rid of his present holdings in order to invest the proceeds in the new issue. The underwriter's profit on the new issues makes it worth while to do a great deal of this brokerage work as an accommodation for customers, in order to keep the market for new securities alive.

II. THE MARKET FOR NEW SECURITIES

The marketing of new issues of corporation bonds and stocks is a business of entirely different character from the business of bringing together buyers and sellers of securities already outstanding. In the latter case, no one is greatly concerned in facilitating the trade except two investors, one seeking to buy and the other to sell. If the issuing corporation has any interest in the trade it is indirect, as the quotations for its securities may affect its credit at the banks, or influence the market for other securities it may have to offer in the future. Consequently, the compensation of the broker or other middleman dealing in old securities must come in one way or another out of the difference between the prices at which one investor is willing to sell and another is willing to buy at the same time. This margin, in the case of securi-

ties of established merit, is usually rather narrow, so that the middleman cannot afford to go into the market and use the arts of salesmanship to drum up purchasers. His function approaches that of a real *middleman*, that is, a connecting link between two individuals who have a real interest in getting in touch with one another.

On the other hand, corporations in need of capital are willing, or can be forced, to pay for capital amounts largely in excess of what the average investor can secure for his relatively small units of capital without the aid of the middleman. The margin between the most the public will pay and the least the corporation can afford to take, rather than fail to market its securities, is a large one, hence the compensation of the banker who effects the sale can be made much larger than is possible in brokerage in old securities. Moreover, new securities usually require some active effort to interest investors in their merits, in part because they lack the reputation which comes from a satisfactory record of interest or dividend payments, and in part simply because they are unfamiliar and if not advertised would be likely to remain unnoticed. This makes the services of specialized selling agents necessary.

The selling of new securities comprises several quite different kinds of marketing.—High-grade securities are seldom sold without professional aid, except where stock is sold through the issuance of "rights" to subscribe at a low price to holders of stock already outstanding, and even in this case the guaranty of a financial institution is sometimes secured before the issue is offered. Low-grade securities, on the other hand, are frequently marketed direct by the issuers, less often through the agency of a bank, broker, or bond-dealer.[1]

The chief institution concerned in the marketing of new securities of a conservative type is the investment bank, commonly known as the bond house. Typically, this is a highly specialized institution, though of recent years a great deal of the business has been taken over by bond departments of large city banks, and there is also some tendency to combine the business with brokerage in miscellaneous stocks.

[1] By high-grade securities are meant the prior lien bond of solvent corporations with a fair earning record extending over a period of some years and not engaged in a highly speculative line of business, the junior bonds and preferred stocks of the stronger members of this group, and the common stocks of a few of the very strongest. It should not be overlooked that this classification has reference only to new securities. Old securities present such a regular gradation of degrees of risk from the safest to the most speculative that a classification into "high grade" and "low grade" has little or no usefulness.

Investment houses are of three principal types: first, the large houses which deal directly with corporations, taking over whole issues or arranging syndicates to divide the responsibility; second, the distributing houses, which do little or no large purchasing but accept allotments from houses of first purchase and distribute them to their customers; third, houses organized in affiliation with individual corporations (usually in the public utility field) to aid in the distribution of their securities.[1]

Analysis of the merits of a proposed issue of corporation securities and determination of the price at which it should be offered to the public, if it is deemed to be worth floating at all, is highly expert work. It includes an analysis of the corporation's record of earnings and of its balance sheet, an appraisal of the property, usually by a firm of engineers, an audit of the books by an independent firm of public accountants, a survey of the state of the industry in which the firm is engaged, and a study of the outlook for the security market. This work, however, has to be done only by the house of first purchase. The distributing houses content themselves, as a rule, with the results of the investigation made by the purchasing house and apply for as many bonds as they think they can dispose of, or, perhaps more often, accept the quota which is allotted them. The retail price is fixed by the original purchasers, or by the management of the syndicate if it is a joint undertaking, and no house is allowed to sell its quota below this figure. The weaker distributing houses are dependent on the good will of the larger houses to secure their quotas, and can hardly refuse to accept the responsibility for the share which is given them.[2]

The houses which distribute securities direct to investors number several thousand in the United States alone. The process of distributing an issue has been described by one writer as follows:

When an issue of securities is ready for distribution, it is necessary to attract the attention of potential investors. This is customarily done by

[1] For example, the Utilities Securities Corporation's chief business is the making and finding of a market for the securities of a group of midwestern public utilities controlled by Samuel Insull; the Electric Bond and Share Company distributes securities of corporations affiliated with the General Electric Company; Henry A. Doherty and Company distributes the numerous issues of the Cities Service Company and its subsidiaries.

[2] Cases are not unknown where distributing houses have accepted quotas of undesirable issues rather than risk the loss of good will of the house responsible for the securities' distribution, but insisted on the listing of the securities on a stock exchange so they might have a chance to get rid of their quotas through an impersonal market and not have to load up their own customers with them.

means of a public announcement, which formally calls attention to the amount of the issue, the terms, and the date by which subscriptions must be in. In many cases a great deal of general advertising has been quietly done before the public announcement is made; indeed, the securities may all have been subscribed for in advance, in which case the public announcement might be regarded as superfluous, except that it affords an opportunity to call attention to the significant fact that the bonds have already been disposed of, thereby adding to the prestige of the house or syndicate. The public announcement is aimed at investors *en masse*, and it is effective in proportion to the attractiveness of the particular issue and the condition of the investment market.

The subscribers include, as already noted, the houses which have participated in the syndicate, other bond houses, dealers and brokers, and a number of closely associated financial institutions. One writer has listed the following among these associated institutions:

"1. An insurance company and its directors, who, if rich men, will probably buy for their own account some portion of a bond issue that their company has taken.

"2. A firm of bankers or a bank in a smaller city that supplies a local investment demand.

"3. A European group or syndicate that acts as a secondary distributor or buys securities against which it issues its own debentures, as in the case of the Scotch trust companies and the investment associations of Holland.

"4. Individual trustees or lawyers charged with the investment of large estates, who are generally willing to anticipate their requirements if anything especially choice is for sale.

"5. Trust companies and their correlated banks, whose purchases may be either for the trust funds of the former or an investment for the deposits of both.

"6. Savings banks, which, taken as a class, are the largest institutional buyers of the classes of bonds to which they are restricted by the laws of the various states.

"7. The list of the various subsidiary groups among which the distributor of bonds finds his best market might be extended almost indefinitely, but those described will give a reasonably clear idea of what may be called the headwaters of the investment stream that must be kept continually flowing into the bond market."[1]

The second part of the selling program is the more difficult—that of convincing individual investors by direct and personal appeal of the soundness and attractiveness of the issue in question. If the bond market is apathetic or crowded with issues—if, as the phrase goes, there are many undigested securities floating around—the selling of the entire issue may

[1] Theodore H. Price, *Outlook*, CVI (1913), 598.

prove a very difficult and long-drawn-out affair. It involves the use of advertising literature sent through the mails, and to an ever-increasing extent it requires expert salesmanship. In former days when the issues of securities were few and when the announcement of a new offering was always an event of importance, advertising literature made an effective appeal; but under present conditions, with a large number of bond houses and with thousands of different issues, the mails are to some extent losing their effectiveness. Much of this advertising literature is consigned to the waste-paper basket by the busy man of affairs without so much as a glance at the offer. Personal appeal through salesmen is increasingly necessary to bring results.[1]

"Low-grade" securities are usually marketed by the issuers.—The organization for selling bonds and stocks, which has just been described, is only available for the service of concerns which have a fairly well-established reputation, a strong record of earnings, or in the absence of these a very unusual prospect for the future. An investment banker can only do business profitably by making repeated sales to the same buyers. Hence, his good will is his most valuable asset, and he cannot jeopardize it by undertaking to float speculative securities, even in cases where the prospect of success is such as to make the speculation a very attractive one. The reputation of an investment banker is injured by a few flotations which result in loss to investors more than it is helped by numerous cases where the venture turns out better than was anticipated. Hence, the rule of "safety first" has come to be accepted as axiomatic in investment banking quite as much as in commercial banking. The not infrequent cases where securities floated through the stronger investment houses do turn out badly are to be accounted for rather by errors in judgment than by any disposition to take speculative chances.

The result of this situation is that concerns which, on account of their youth or the hazardous character of the business in which they are engaged, cannot meet the standards of the investment bank, find it much more difficult to supply their capital needs. Securities of these concerns are lumped together in financial literature under the caption of "low-grade securities." The term is somewhat unfortunate, as it carries with it the implication that all securities outside the "high-grade" class are inferior in merit. The class does include many securities which are issued in defiance of the dictates of sound judgment, and some which are downright fraudulent, but it also

[1] Adapted by permission from H. G. Moulton, *The Financial Organization of Society*, pp. 234, 237–39. (University of Chicago Press, 1921.)

includes many excellent speculative and semispeculative opportunities, and also many thoroughly sound issues which are too small to receive attention from an underwriting house.

New stocks and bonds, which cannot find a market through the investment banker are usually sold by the issuing corporation, sometimes by newspaper advertising, sometimes by circularizing selected lists of names, sometimes by contracts with concerns which are organized to sell low-grade securities at exorbitant commission rates. The methods used in the marketing of highly speculative securities are as a rule very different from those employed by the conservative investment banker. Flamboyant advertising, exaggerated statements, comparisons with successful enterprises of more or less similar character, and other methods of inducing people to take snap judgment, have been used so frequently both by promoters of fraudulent schemes, and by sincere but mistaken promoters, that the whole business of selling by direct solicitation has fallen somewhat into disrepute, and perfectly legitimate enterprises are frequently handicapped in getting capital for this reason. The difficulty is that direct solicitation either by advertising or by correspondence with miscellaneous individuals whose names fall into the possession of promoters, is so expensive that any enterprise financed in this way starts out heavily handicapped. If, as is not infrequently the case, 50 per cent of every investor's money goes to pay the expense of discovering him and selling him a security, the enterprise must earn 20 per cent on the capital actually used, in order to pay 10 per cent on the capital raised. Hence, only propositions which have some chance of making abnormally high profits are worth financing in this way, and enterprises which have a chance of making abnormally high profits nearly always involve a correspondingly high degree of risk.

CHAPTER IX

STOCK SPECULATION AS BUSINESS ENTERPRISE

With this much information concerning the market machinery for trading in securities, we are now ready to examine the methods by which investors and speculators make use of these markets. In the present chapter, we are concerned with the business of speculation, that is, trading in stocks and bonds, chiefly stocks, for the sake of profit from price fluctuations. Two tasks, therefore, present themselves, first, a survey of certain technical practices which are associated with speculative trading, and second, a consideration of the methods used in attempting to forecast the course of the market as a basis for such operations.

Orders may be placed for execution in either of three ways: at the market, at a limit, or on stop-loss order.—A market order is simply an order to buy or sell a definite number of shares of stock (or a certain quantity of bonds) at the best price obtainable. In the case of an active security, it may be assumed that a market order will be executed at a price not far from the last quotation, but in the case of an inactive security a "market" order of any considerable size may have to be executed at a price far above the last price, if a purchase, or far below it, if a sale. Market orders have the advantage of certainty of execution, but are too dangerous to find extensive use outside the list of securities in which there is a brisk speculative market.

A limited order is an order to buy or sell at a certain price, or better. In the case of an order to buy, for instance, at 70, if the order can be filled at 69 the customer is entitled to secure the stock at that price, just as though the order had been placed "at the market." A buying order with a limit *above* the current price is in effect a market order, with a protective provision to secure the buyer against the risk that his order may happen to find the market bare of offerings and cause an unexpected advance. A buying order with a limit *below* the current price, on the other hand, can only be executed in the event of a decline. Such an order is known as a resting order. Sometimes it is limited in force to the day on which placed, or to a specified period; sometimes it is of indefinite duration. Orders of the latter

class may be carried on the books of the broker for weeks before an opportunity presents itself for their execution. A *scale order* is a series of resting orders for execution at specified prices, below the market in the case of buying orders, above in the case of selling orders.

A stop-loss order is in a way the reverse of a resting order to buy or sell. An order to buy on stop, for instance, is an order to buy "at the market" as soon as a trade is made at a certain price *above* the present market. Such orders are used for several purposes. Their most frequent pupose is to protect speculators from excessive losses on single transactions. If, for instance, A buys stock at 60, putting up a margin of ten "points," a stop-loss selling order at 57 would insure that his stock would be sold as soon as the market declined to that point, thus reducing the risk of a greater loss. It should be noted however that the stop-loss order does not furnish a guaranty that the loss will not exceed that contemplated, for after a sale is made at 57 there may be no bid for more stock above, say 55, and, the broker must sell for whatever he can get. As a matter of fact, every margin transaction involves a real stop-loss order, for the broker will have to sell to protect himself before the margin is exhausted; what the stop-loss order does is to place the selling point closer to the market, thus increasing the probability that the account will be sold out, but decreasing the probable loss from such action.

Occasionally stop-loss orders are used when there are no open trades to be protected, on the theory that if the market advances to a certain point it will advance further. For instance, in an active market a trader reaches the conclusion that if the quotation for a certain security reaches a round number, say 100 (or perhaps reaches the highest point it has previously reached during the year), a number of buying stop-loss orders from short sellers will be uncovered, and a further advance will result. He will therefore place a stop-loss order at 100 with a limit of $100\frac{1}{4}$, and a resting order to sell at $100\frac{7}{8}$, hoping to shave a profit out of the flurry that will occur if 100 is reached.[1]

A third use of the stop-loss order is connected with the operation known as *pyramiding*, which is the practice of using accumulated profits as margin to protect further trades. Suppose B sells short 100 shares of Baldwin Locomotive at 125, placing with his broker $1,500 as margin. In the course of a few days, Baldwin declines to 120. The trader now has twenty points' protection, while his broker

[1] All operations aiming at small profits from quick fluctuations are popularly known as "scalping" operations.

requires only fifteen. The extra $500 is sufficient to enable him to sell short an additional 25 shares and have sixteen points' protection on the whole "line" of 125 shares. He does so, and the market continues to decline till a price of 115 is reached. The profit from this further decline is $625, enough to margin 35 or 40 shares additional. It is obvious that so long as the market continues to move in a downward direction the size of the order and the rate of profit can be made by this method to increase in geometrical ratio, and if no mistakes are made concerning the course of prices an enormous profit can be made with very small initial capital. A stop-loss order is not essential to such an operation, but is frequently used both to control the pyramiding process and to protect the profits. For instance, in the illustration given, when the market reached 117 the trader might put in a stop-loss order to sell 40 shares at 115, and another to buy 125 at 118½. The selling order would provide for the further development of the pyramid, in case prices continued downward, while the buying order would probably close out the trade at some profit, in case of a reversal of the trend.

The stop-loss order for protection is an utterly illogical device and its persistent use is one of the surest roads to financial ruin. What it amounts to is saying that a certain security, which we do not care to buy at the present price, we intend to purchase when it has advanced to a figure from one to five points higher. If a security is not an attractive purchase at a given level, it is never rendered more attractive by an advance, whether of small or large proportions, in its price. It is true that in certain situations the stop-loss order is a useful protection, but the careful trader does not put himself in such situations. Invariably the necessity for the use of the stop order goes back to one fundamental reason, overtrading. If one's trades are so large in proportion to his capital that an adverse fluctuation of a few points forces him to close out or reduce his line, the trades are too large. Trades made on account of exhaustion of margin, or on account of fear of that contingency, are practically always contrary to the trader's judgment, and man rarely profits by putting himself in a position where his action is dictated by *fear* instead of by *judgment*. Stop-loss trades are fear trades.

The only case where an exception to this condemnation need be made is in the case of the use of the stop order to develop a pyramid, and even here its use is generally an indication of overtrading. If, however, our trader, in the illustration cited above, had "inside

information," or for any reason was practically certain that Baldwin Locomotive was about to decline in price to a certain point, and felt sure also that there would be no large fluctuations upward before the decline was completed, the use of the stop-loss order to build a pyramid downward offered him the chance of making the maximum profit out of his limited capital. Such situations are very rare; in most cases even though the trader were right in his opinion of the trend of the market, the use of the pyramid would insure that a strong rally would "wipe him out" before the operation was completed.

Before turning to the technique of forecasting market movements, attention must be given also to certain maxims by which speculators sometimes attempt to determine a profitable line of individual action. "Cut your losses and let your profits run," is a very common adage of the financial district, for which there is very little basis in sound reason. If the maxim means anything definite, it must mean that the same price is a desirable price at which to sell if one bought a little above it, and an undesirable one at which to sell if one bought a great deal lower. "No one ever lost any money by taking his profits," say other sages of the market. Even fairly high-grade investment houses and financial journals sometimes advise clients to sell if they have a profit, but to hold on if they have a loss. This is just the reverse of the other maxim, and is equally irrational. The fact is of course that the price at which a security was bought is totally irrelevant to the question whether it should be sold. If the chances seem to favor an advance, and no more profitable use of funds is in sight, presumably securities should be held; if they are expected to decline, it is irrational to hold on simply because selling involves taking a loss, or because it does not.

"Averaging down" is another fallacious method of speculating, very similar in principle to those just discussed. If, for instance, C has bought fifty shares of stock at 90 and the price later declines to 80, he buys fifty additional shares at that price in order to reduce his average cost to 85 and improve his chances of getting out without a loss. Of course, the second trade may be a good one, but in deciding whether it is so or not, the price at which the first lot was bought is of no significance.

Holding stock merely because it was bought at a higher price instead of selling out when one foresees a decline, and selling to "take profits" in spite of indications that the market is going higher, are

expressions of the same fallacy, the notion that the past history of one's own individual account has a different significance in determining the line of one's future conduct from the significance it has in the determination of anyone else's. Every decision to enter on a new speculation, or stick with an old one, should rest on a judgment of the future; the past is of no significance except as an index of the future, and, except as a part of the whole history of the market, one's own particular record of losses or gains is totally irrelevant.

The exception to this generalization is the same that was suggested in connection with the stop-loss order, that is, the case of the man who overreaches himself by trying to handle trades in excess of what his capital justifies. The man who overtrades *must* cut his losses short to avoid the embarrassment of margin calls, but by putting himself in such a straitened position he has forfeited the privilege of following his best judgment.

Let us turn now to the consideration of the methods used by speculators in attempting to forecast the major and minor swings of prices. Attempts to make money out of purchase or sale of securities may be classified as follows: (*a*) speculative trading in securities, aiming at quick profits; (*b*) speculative trading aiming at long-swing profits; (*c*) investment operations aiming at high yield on investment; (*d*) investment operations aiming primarily at safety.

Trading in stocks for quick profits comprises the bulk of what is commonly known as stock speculation.—The methods of analysis and operations used by persons engaged in this kind of speculation may be outlined as follows: (*a*) trading on the technical position; (*b*) trading on the news; (*c*) trading on "inside information," "tips," etc.; (*d*) manipulation.

By the technical position is meant the sum total of conditions affecting the movement of prices which have their origin in the operations of the traders themselves. Scientific study of the technical position is usually equivalent to a study of the factors which determine the movement of prices in the immediate future, as distinguished from those which determine the trend over a period of weeks or months. That this distinction is an important one may be seen from the fact that in a strong advancing market extending over several months, the prices of active stocks will *decline* on 30 or 40 per cent of the trading days. The main elements which constitute the technical position are:

1. *The present and prospective state of the loan market, especially for call loans.* This includes both the interest rate and the attitude

of bankers toward speculative collateral, affecting the proportion of market value of stocks which can be borrowed upon them. The speculative markets are absolutely dependent on the banks for funds. Margin buyers pay interest, short sellers pay none; hence an advance in money rates strengthens the bears and weakens the bulls. Conversely, an advance in the market increases the demands on the banks, partly because the same stocks are now good collateral for larger loans and partly because advancing prices generally stimulate an increase in speculative interest.

For these reasons the call-loan rate is very generally regarded as a valuable index of the strength of the market, a rise in the rate tending to force liquidation and therefore forecasting a decline in prices.

The importance of this factor is very much overestimated, however. It takes only a very small fluctuation in the price of a security to offset the interest cost of several weeks' waiting, and even a doubling of the call-loan rate would rarely make the difference between profit and loss on any except very long-time speculations. Anything which is generally believed to affect prices will have some effect on them simply because the effect is anticipated, and the call-loan rate is so emphasized by financial writers that it can hardly fail to have some sentimental effect, but its practical importance is slight.[1]

2. *The amount of the floating supply of speculative securities*, i.e., stocks in the hands of brokers, most of which are likely to come on the market as a result of comparatively slight changes in price. This floating supply, it will be noted, determines whether the stock can safely be sold short. A small floating supply makes the position of the short seller precarious; many stocks cannot be borrowed for short sales at all.[2]

3. *The proportion of the long stock which is weakly held*, i.e., held on small margins or held by people who are interested in taking quick profits and cutting losses short, as compared with the proportion of stock which is known to be held for purposes of control or by investors who are not at all likely to sell or lend the stock.

[1] Mr. L. D. Thompson has shown (*The Relation of Call Money Rates to Stock Market Speculation*, a thesis submitted in candidacy for the degree of Master of Arts at the University of Chicago, 1922) that there is no significant correlation between call rates and the *volume* of trading on the New York Stock Exchange, and his data seem to indicate also a lack of correlation between call rates and prices though the latter question is in need of further investigation.

[2] See p. 138.

4. *The size of the "short interest"* (number of outstanding loans of stock to short sellers).

5. *Location of stop-loss orders and resting orders.*

6. *The state of speculative sentiment on the part of the public,* the amount of free capital controlled by the section of the public who display an interest in the market.

Judging the technical position is not easy.—Of these six elements only the first is readily ascertainable. The data most commonly employed in the effort to judge the others are:

1. *Loan rates for stocks.*[1] When the loan rate is low, or a stock loans "flat," or at a premium, the presumption is that there is a big short interest in that particular security. This may plausibly indicate that there is a preponderance of expert judgment to the effect that the price is too high and is likely in the long run to fall. Its immediate significance, however, is just the opposite, for it indicates that there is a big group of prospective buyers made up of those who have already sold short. They will have to buy at any price if their margins are endangered by an advance, and will probably buy to obtain their profits if there is a decline. Hence, the technical position is judged to be "strong." Too much confidence should not be placed in this reasoning, however, for the floating supply may be increased at any time by the sale of loan of stock which has been held outside the "Street." (For further discussion of this point see pp. 166–67.)

2. *Public interest,* as manifested by the size of the crowds before the brokers' blackboards, and the volume of orders on their books. Increasing interest on the part of the people is likely to presage increased buying power, as the public always comes in after a dull market as a group of buyers rather than short sellers. Such an increase in public buying, however, may be the signal for a wave of delayed selling by professional speculators, pools, or insiders in the management of corporations who have waited for just such an opportunity to unload their holdings.

3. *Volume of transactions, as shown by the ticker tape.*

4. *Continuity of quotations* and variation of the volume of trade from day to day.

5. *Charts, calendar schemes, and other mechanical forecasting devices.*

These last three methods, which comprise the favorite field of the modern alchemist, may be discussed together. Of schemes to forecast

[1] See p. 130.

the action of market by studying the record of prices and volume of sales as it appears on the ticker tape or in the daily papers, there is no end. Few features of modern business have received more minute study than has been devoted to the attempt to work out a mechanical method of judging from the present and past condition of the market what its future is going to be. "Tape readers" study the fluctuations of prices from hour to hour, record the volume, and attempt to forecast the immediate future, trading for profits of an eighth to a half point. Chart artists trace the movement of prices of selected groups of stocks and attempt to draw conclusions from the shape of the curve. "Calendar traders" scrutinize the stock-exchange quotations for evidence of seasonal tendencies, and express their conclusions by such phrases as the "January rise," the "spring rise," etc. Most of this sort of study is obviously wasted effort. The generalizations are usually based upon the experience of a comparatively short period, five or seven years in the case of the calendar trader and six or eight coincidences in the case of the chart plan. Even if such coincidences are not accidents, but due to some continuing cause, it does not follow that this unknown force will continue to produce the same effect. If no other force comes in to change the future, the very fact that a regularity is great enough to be observed by numerous traders constitutes a force disturbing the sequence of price movements in the future. If, for instance, there is a tendency for several years in succession for stocks to rise in January,[1] perhaps on account of dividend disbursements reinvested around January 1, the more regularly the phenomenon appears, the more certainly will there be a bunching of purchases just ahead of the date when the rise is due in order to sell on the rise; and these operations may cause the rise to appear earlier and to be followed by an earlier decline. It would be rash indeed for anyone to say that none of these mechanical methods has any value, for no one has tested them all, and the more valuable any method proves itself to be the less likely are its discoverers to give it publicity. So far as can be judged, however, from a survey of the rather extensive literature of stock speculation, there are few less promising ways of making an income than attempts to "beat the tape" by a study of the tape itself.

It does not follow, however, that a study of the data revealed by the tape is of no significance whatever in forecasting the course of

[1] The careful studies published by the Harvard Committee on Economic Research in the *Review of Economic Statistics* indicate that there is no seasonal fluctuation in the prices either of industrial stocks or of high-grade bonds.

prices. There are apparently certain relationships between the volume of trading and the course of the typical stock-exchange cycle which are useful as a supplement to other methods of analysis. The following quotations summarize all that, in the author's opinion, can safely be said with regard to this phenemenon:

How much attention, if any, should the "investor for profit" pay to the stock market from day to day or from week to week? Has he anything to gain from watching current fluctuations and volumes, or studying the general behavior of the market?

We may answer at once that he should pay relatively little attention to these things. Earnings and values, growth of population and of business, dividends and money rates, political conditions and the accumulation of capital in the banks, are of far more importance and significance to the investor than any indications he can draw from the temporary and often erratic fluctuations of prices.

Yet this question of the action of the market should not be entirely ignored. It is a well-known fact that some professional speculators are able, by carefully watching the technical indications derived from a study of volumes and prices, to make more money during the year than they lose.

Reduced to its lowest terms, the action of the market includes only three basic factors: (1) price; (2) time; (3) volume; that is, the number of shares bought and sold at a certain price or during a certain time.

Each of these three factors may be recorded or used in different ways, and the three, or any two of them, may be combined according to different plans.

First, no important conclusions can be obtained from any one of the three factors, taken alone. It is the varying relations between two or three of them that serve to give the market a sort of character of its own.

Second, the element of time must always be included. Thousands of students have wasted a great deal of more or less valuable brain-power in trying to draw conclusions from a combination of prices and volumes, without reckoning in the lapse of time. In my opinion, it can't be done.

Third, a study of time and volume without prices would be meaningless, as the investor cannot buy or sell except at some price.

Common sense tells us that the lowest prices are likely to be made when most people are trying to sell, and the highest prices when the greatest number are anxious to buy. We shall expect, then, that the volume of sales will be relatively large at the top and the bottom, and this conclusion is borne out by history.

A heavy trade in stocks is pretty sure to be accompanied by relatively wide fluctuations in prices—the whole market gets bigger, in every way. So we find that at these turning points the range of prices for the day, as shown by the length of the lines on the graphic connecting the average high with the average low, will be relatively wide.

After a period of heavy selling pressure, buyers are not likely to rush in the moment the selling ceases. They fear a renewal of the liquidation, and will only begin to buy gradually, as the market becomes quieter and more settled. Consequently a period of activity—that is, big volumes and wide daily ranges—at low prices, is usually followed by a time of dullness without any very great change in the general level.

The same principle, of course, applies after great activity at high prices; but the period of activity may be longer and the period of dullness shorter than at the bottom, because speculation is naturally broader at high prices and the public participation in the market more general.

Probably the best indication of the trend of the market, that is easily available to everybody, is found in the comparison of the total volume of trade on days when the market moves sharply upward, and the volume on declines. In a bull market, buyers come in on the advances. In a bear market, they refuse to do so. In a bear market, holders are urgent to sell on declining prices. In a bull market, they hold on stubbornly.

The result is that, in a bull market, the volume of trade is likely to increase on the advances, while in a bear market it will probably become heavier on declines. But this principle can only be interpreted and applied to the market by long study and careful observation. The novice finds many stumbling blocks.

One of them is that he is almost sure to lay too great weight on small movements, caused only by professional operations. Professional traders make prices temporarily, but they have very little influence on the general trend of prices over a considerable period. They are merely trying to follow this trend, not to make it. The attitude of investors creates the trend, and no useful indications as to its direction can be gained from fluctuations caused only by professional speculators.[1]

The difficulties involved in attempts to predict the market's course on the basis of its own action are summarized by an experienced trader as follows:

It might be supposed that the borrowing demand for stock would serve as an indication of the extent of the short interest, but as a matter of fact it is of little value in that direction. In the first place, the borrowing may be by a short interest of an "investment" character, which cannot be driven to cover and therefore does not create an "oversold" market in the ordinary sense of that word.

Second, the stocks borrowed may be to temporarily take the place of long stocks sold by previous holders whose certificates have not yet arrived in New York from abroad or from other cities, or even for holders who have delayed getting their certificates out of their vaults and delivering them.

[1] Taken by permission from G. C. Selden, *Investing for Profit*, 137–48. (Magazine of Wall Street, 1913.)

A large interest may sometimes prefer to have its liquidating sales appear to be short sales until it has disposed of its entire line, thus avoiding any premature filling up of the Street with certificates, which might help to depress prices.

How then are we to find out the amount of the short interest? Some line on the situation can be obtained by talking with active brokers. True, the broker can only express his opinion, formed from such opportunities for observation as he may have. For that reason, his words cannot be accepted as gospel. In fact, it will often happen that one broker thinks the market is oversold while another sees no special evidence of any extended short interest. Nevertheless the broker has a much better opportunity of getting this information than the outside investor, and his opinion should be duly considered.

Coming to the position of big operators, this is as a rule very difficult to ascertain and the average outside speculator can rarely allow himself to be much influenced by it. Most of the gossip floating around the Street as to what Morgan, Kuhn-Loeb, or the City Bank is doing in the market is worse than valueless. . . . .

The task of finding out what big interests are doing in the market is not absolutely impossible, but it is almost as difficult as learning to judge the market correctly yourself. For that reason your main reliance must always be on yourself, and such reports are always to be regarded suspiciously.

Sincere reports from the floor as to the position and sentiments of the majority of the traders are not usually very difficult to get from your broker, but I am obliged to admit that I have never got much benefit from them. Floor traders rarely agree in their views and as their opinions are usually formed from the surface indications which flicker back and forth before their eyes, their sentiments are likely to change with a suddenness and completeness which are confusing to the outsider. They willingly report what they see, but I doubt very much whether the outsider can make much profitable use of their reports. . . . .

The presence of stop orders above or below the current plane of prices will, if they are in any considerable volume, have a decided effect on the trader's position. The first question in this connection is: How are we to discover whether such stop orders are present or not?

The reports on this subject which are from time to time heard floating around the Street, or are 'phoned by customers' men to their more active following, are hardly ever to be taken at their face value. This is chiefly because actual information about stop orders is, as a rule, unobtainable. Reports on the subject are pretty sure to be guess work. . . . .

Of course the most important stop orders are not put on the floor. In fact they usually do not exist anywhere except in the mind of the operator.

He has, let us say, a big line of Steel common. He makes up his mind that if Steel declines to 62 he will close out his line, as that much decline would indicate to him that his judgment of the situation has been wrong.

Such a determination on the part of the operator is exactly equivalent to a stop order on his holdings of Steel at 62; but there is no record of that determination anywhere, and no possible way of getting information about it in advance. The operator does not tell his broker to put a stop at 62, because he very well knows that such a course would invite attack. If through any "leak"—and it is very difficult for any brokerage house, no matter how honorable, to stop all possible leaks—the fact became known to the floor traders that a big line of Steel would be stopped out at 62, they would all be expecting the price to decline to 62, and would therefore hesitate to buy even if they did not take the short side. The small trader, of course, need not hesitate to put in his stop in advance. He is merely a fly on the wheel, and his position will have no perceptible effect on the market.

You always have to remember that when you feel a certain way about the market, a lot of other people are feeling just the same way. What you have to do is to be a little bit cleverer than the others—for example, to buy when the stop orders are executed around 150. Then you can safely enough put in your own stop at perhaps 149 after the market has turned upward. But it takes you a number of years to get to be cleverer than others—cleverer than the market, in other words—and in the meantime you are very likely to put your stop in the wrong place. . . . .

In a general way we can get some idea of the situation by noting whether transactions increase or decrease on the declines. Short sales may, it is true, produce a moderate and temporary increase in business on declines, but any important or persistent increase may always safely be set down as evidencing sales by actual owners of the certificates. In order to do more business at lower prices, traders and speculators must very soon get hold of more stock which may be bought and sold. If instead of finding more stocks in the floating supply after a decline they find fewer stocks, transactions will quickly shrink and a trapped short interest will soon have to buy back its sales at higher prices than where they were put out.

Suppose prices decline rapidly on a big volume of trade for perhaps two weeks, with relatively wide fluctuations in the leading speculative stocks from day to day. Then from near bottom prices we have a sharp rally for several days, caused by covering of shorts. After that the market grows dull and drifts slowly downward for two or three weeks, with transactions much smaller than on the previous decline and with a narrower range of daily fluctuations. This is a plain case, and it generally occurs in substantially the way above outlined several times in every year. It shows three steps, which always occur when the market strikes bottom and turns upward:

(1) Liquidation by investors and traders who have become discouraged, either by the unfavorable outworking of the whole situation or by specific bear news.

(2) Partial cessation of such liquidation, quickly followed by covering of shorts which had been put out during the decline, causing a rally.

(3) A period of rest, accompanied by a small amount of left-over liquidation and by scalping short sales, the latter practically all by professionals and semi-professionals.

After this process the market is ready to respond to favorable news when it comes, and will decline but little on further bear news, unless it is of a very sensational character.

What has really occurred is that the floating supply of stocks, which had been increased by liquidation, has little by little been absorbed. Some investors were buying on a scale during the first decline. Others bought when they thought the market has turned. Still others were busy picking up stocks during the third period above described, so that every evidence of temporary weakness resulted in scattering buying orders.[1]

Trading on the news involves great risks.—The second great method of speculating for the short swing is trading on the news. There is no place in the world where so much attention is paid to the gathering, dispensing, and study of the current news as in the speculative investment markets. Outside of the news of sports, the want ads, the divorces, and the crimes there is little in the daily newspaper which does not have a bearing on the incomes of businesses, big and little, and hence upon the value of securities. But the newspaper is too slow and too little specialized to meet the demands of the speculative public, so an elaborate system of specialized information service has been developed. Of this apparatus, the most important parts are the news ticker, the Bulletin Service, the market letters, and the reviews furnished by the professional financial service bureaus. Of these, the quickest is the news ticker or broad-tape service, a collection of bits of general political and economic news, corporation reports and brokers' gossip, which is sent out over leased telegraph wires and printed simultaneously in every important brokerage office in the country.

Slightly slower than the ticker, but fuller, is the hourly or half-hourly Bulletin Service published in eastern cities. Some brokerage houses issue daily market letters which purport to explain the action of the day's market and make cautious predictions of the nearby

[1] Adapted by permission from Browne, *Practical Points on Stock Trading*, 35–49, 55–64. (Magazine of Wall Street, 1918.)

future; others issue more pretentious weekly reviews which discuss the general economic situation and also summarize the known facts concerning the situation of individual companies.

Trading on the general news is simpler than trading on the technical position, and looks, at first glance, to be a more sensible procedure. "Values are subject to constant change," runs the reasoning back of this method of procedure. "The changes all have causes, and these causes must in large part appear in the news. Trading on the news after everyone has it obviously promises no profits; the important thing is time. Our business is to anticipate other men's decisions to buy or sell, and to do this we must get the news before they do." This reasoning is sound enough, yet there is no reason to believe that people who make a practice of buying Bulletin Services or frequenting brokers' offices to keep in touch with the latest information actually make money by so doing. A fourfold difficulty obstructs all attempts to make money in this way. In the first place, the important news, the items that will cause a real change in the level of stock prices, such as supreme-court decisions or declarations of war, are known to a great many people before they appear even on the broad tape, and are pretty accurately anticipated by a great many more, so that even the most studious frequenter of the broker's room is apt to be too late. In the second place, speed is gained in these services at the sacrifice of accuracy. Like the daily press, the news services abound in unverified rumors, some of which are probably put out for the deliberate purpose of influencing the market, but many merely to fill space. In the third place, on nine out of ten days there is no news of sufficient importance to justify anybody in changing his market position, and in the absence of really significant news the tape and the bulletins are filled up with actual information which is indeed more or less relevant to the general financial situation but is so slight in its significance and so great in its mass that it creates only confusion. Finally, the Wall Street news services are themselves read by so many people that any given individual finds it difficult to profit greatly by being one of those who get the news through them. Prices adjust themselves to the known elements of a situation with astonishing rapidity, and there is no commoner error than trying to make a profit by trading on news which is already fully discounted before one's order comes to the floor.

The following comment, by the editor of a prominent financial journal, summarizes the situation well:

So far as the news is concerned, there are two kinds: known and unknown. Known news is what we find on news slips, news tickers, newspapers and the usual run of market letters. Known news is what has happened and has been told. It becomes public property the moment it is printed in Wall Street. News known to everybody is, except in rare cases, of little use to anybody. Yet the great public thirsts for news, talks news and trades on news. Market letters of brokerage houses are practically all based on an analysis of known stock market factors; also newspaper financial articles and "reviews and outlooks."

One need spend but a few months in Wall Street to find that the movements of the market[1] cannot consistently be reconciled to the news, statistics, earnings, outlook or such other considerations as largely influence the general public. Almost every day we see the market advance on bad news or break in spite of favorable developments. It is impossible to analyze the effect of a certain situation upon the minds of a million people who are interested in the market, either as investors or as speculators. Wall Street is a great "hopper," into which all day long there pours an unceasing stream of news, statistics, decisions, railroad and industrial reports, Government estimates, court rulings, corporation announcements, and last, but not least, rumors and tips.

All this news and all these facts and rumors and tips which are poured into the "financial hopper" have a certain influence on the minds of traders and investors, causing them (directly or indirectly) to buy or sell.

We frequently notice squibs in the papers to the effect that "the advance in Reading was due to the company's favorable monthly report," or some expression of that kind. One can readily see how impossible it would be for the reporter who writes this paragraph to ascertain just why those who bought and sold during the day, did so. In order to make such a statement with any degree of accuracy it would be necessary to communicate with each buyer and seller for the day, extract from him the reason why he made the trade and strike a balance. These buyers and sellers may be scattered all over the earth, dealing in one, ten, fifty or one thousand share lots. It is, therefore, absurd to place any reliance on statements that this or that was the cause of the advance or the decline. This not only emphasizes the necessity of taking newspaper reports with a grain of salt, but proves that no one actually knows what produces these small advances and declines, although there are a great many people who guess about it.[2]

Trading on "inside information" is very common.—The third method of short-time speculation is trading on "inside information,"

[1] The reference is to short swings, not to the major changes which require months or years for their completion (ed.).

[2] Adapted by permission from Richard D. Wyckoff, "Why the Action of the Market Is a Better Guide than the News or the Fundamentals," *Magazine of Wall Street*, March 19, 1921, pp. 709–10.

that is, information not yet available to the general public. The only generalization which can be made, with reference to the value of this sort of material, is that it all depends on the source from which the information comes. The vast majority of the so-called tips which float around the customers' rooms of the brokerage offices are worthless. Especially is this true of the information in regard to the doings of prominent operators, a popular basis of trading among small-fry speculators. On the other hand, advance information of the condition of corporation reports, and of changes in the dividend policy of important corporations, is nearly always available to a sufficient number of people, so that its market influence is shown from one to three or four days ahead of the public announcement. Boards of directors have often been severely criticized on account of stock-market movements, which indicate that they have themselves operated on the knowledge of their own actions to the detriment of other stockholders,[1] or have improperly given advantages to a favored few. The directors are not always at fault, however. There are many other chances for leaks. Employees of public accountants' offices often know the essential features of a corporation's annual statement before the officers of the corporation know them. Stenographers and telephone operators must be taken into the confidence of the management. Tips from such sources as these may exercise an influence in the market for which the directors are blamed. However, there is no reason to doubt that many corporation directors do consider it legitimate for them to trade in the securities of their own corporations on the strength of their advance information. To quote Mr. Wyckoff again:

> Unknown news consists of important facts in possession of a few insiders. It is the possession of these facts which distinguishes the insider from the public. The insider works with an incalculable advantage. Reports of earnings, probability of reduced or increased dividends, etc., must be known to some one person or a few, before public announcement can be made. This may take place a few minutes, hours, days or weeks later, according to market conditions and the position of the insiders. Meantime those who trade on the news which is known are simply playing into the insider's hands.
>
> The insider does what probably you would do if you were in his place. During the interval between his receiving and announcing the news, he telephones his broker and gives his order. This takes but a moment. If he is a big enough factor, some manipulation may accompany his buying

[1] The Rock Island receivership was a comparatively recent case in point.

or selling; but whether his operations are large or small, there is usually a coterie of associates who act with him or upon his information.

Each of the persons composing this group has his own broker, and each broker his own clientèle. It is customary for a broker who sees inside orders coming through, to advise certain of his clients in accordance therewith, without necessarily disclosing the actual source. For example, the broker will say, "Now Jones, I want you to buy some of this stock. I can't tell you what I know, but there is excellent buying going on, and if you will take on a little, I believe you will make some money." Thus unknown news becomes the power behind a movement which may attain large proportions before public announcement is made—when the unknown news becomes known news.

However desirable this unknown news or "inside information" may be, getting it from its original sources is beyond the reach of the average trader. And even if he had "underground" connections with every important source of information in the Street, there would be no certainty that he could always profit thereby. Insiders are often completely surprised and suffer heavy losses on account of an adverse trend of the market, some other and more effective news, an accident or the operations of opposing speculative pools and large individual traders. One clique may possess a bit of knowledge which, in their opinion, will produce a certain market effect; another group may command greater resources, swing larger lots, diffuse more effective "information." Group One may, therefore, find its efforts futile.

Then we must consider the "sentiment" of the Street, which is frequently more powerful than any group of operators. In former years, manipulators able to swing fifty or a hundred thousand shares could practically dominate the market; but in these days of hundred million dollar issues and billion dollar capitalizations, everybody is stronger than anybody. At such times "inside information" is likely to ruin one who follows it in the face of overwhelming buying or selling by the public. In other words, insiders are not invariably correct. It is an old saying that "inside information" will break anyone.[1]

"Manipulation" is difficult to detect.—The fourth method of speculation for the short turn is manipulation, by which we mean all operations aiming at a profit from a change in the market which the operator himself causes, either by the sheer weight of his own operations or by coloring the news, or often by a combination of both methods. Manipulation is only possible through large-scale operations, and the number of people who can engage in it is comparatively small, though, by pooling their capital and intrusting the management of their campaign to a single manager, a group of individuals can

[1] *Loc. cit.*

influence the market as much as a single operator owning much larger capital. Such pool operations are probably very common, but authentic information concerning their activities seldom reaches the public. The following reading describes typical manipulation methods:

There may be said to be three principal forms of manipulation, apart from those that were formerly conducted through what are known as "wash sales" and fictitious transactions, which have largely been abandoned, and others which it will not be necessary to discuss.

1. The most common and most vicious form is effected by what are in substance bogus purchases and sales to create a false appearance of activity for the purpose of unloading the stock on the public at high prices. The same person or group gives buying orders to one set of brokers and selling orders to another but the selling orders exceed in volume the buying orders until the stock is marketed. The apparent purchases and sales may and often do exceed the actual purchases by the public ten or twenty over. In order to actually unload one hundred shares on the public the manipulator may have to apparently deal in thousands of shares. So long as commissions are paid on these sham transactions on both sides of the bargain the Exchange has regarded them as entirely legitimate, even though the real nature of the dealing is apparent from their volume and from general report and can readily be verified from the books of the brokers, to which the Exchange has free access at all times.

2. A series of transactions conducted for the purpose of acquiring or selling a large block of the stock of a given corporation not for investment but with the intent of realizing an immediate profit, brought about by purchases and sales that are calculated to affect the price in the way best adapted to accomplish the end in view. If the purpose be to accumulate stock so as to sell at a substantially higher level, the plan involves selling part of the accumulations as the stock rises so as to depress the price and then make larger purchases. If the intention is to sell the opposite course is adopted. The ultimate object is to buy stock that you do not want or to sell stock that you do want with the view of affecting the price.

3. Where a new security is to be introduced, instead of advertising its merits by the publication of a prospectus or by open solicitation, the security is here again given a false appearance of activity to attract dealings. After the public has been led to buy on the assumption that it is acquiring a security with an active market that is readily saleable, those who were interested in creating this impression and who have probably disposed of the stock they had to sell find it unnecessary to continue the heavy expense of paying out commissions on what are in effect fictitious transactions, and the buyers' apparently active market gradually and sometimes suddenly fades away.[1]

[1] Taken by permission from Samuel Untermyer, "Speculation on the Stock Exchange," *Supplement to American Economic Review*, March, 1915, pp. 47–48.

Concerning the profitableness of this type of speculation, no authoritative statement can be made, as the facts about successful attempts at manipulation are never made public, and those concerning unsuccessful ones only rarely. The risks involved are obviously large, but whether the profits compensate for the risks undergone we do not know.

Even the trader who is correct in the majority of his forecasts is likely to lose more than he makes.—If all trades made by a given individual are of the same size, and he follows a uniform rule as to the size of the profits or losses for which he will wait before closing out trades, the odds against him are small. Making trades purely at random, the average number of profitable trades, ignoring commissions and similar expenses, would be 50 per cent of the total number of trades, and in the long run the net loss should therefore equal the total amount of commissions and expenses. The average trader would probably get about the same result by following the news and exercising his judgment.

If the trades are of the "scalping" type the commission is a very heavy percentage of the profit aimed at, and a very large excess of successes over failures must be attained in order to avoid speedy ruin; if the trader holds out for five- or ten-point gains or losses, on the other hand, a slight preponderance of successes will more than offset the commissions and other expenses.

The overwhelming difficulty is that it is almost impossible to avoid methods of trading which make the average loss greater than the average gain, so that the trader may be right six or seven times out of ten and still be forced to quit a loser. The reason for this is the incorrigible tendency to expand the scale of operations after a success and to contract it after a loss. Most speculators are supplied with small capital in proportion to the volume of their customary trades—if this were not true the privilege of trading on margin would be of little value, except to the short seller. Suppose a speculator begins trading with a capital of $2,000, and to be conservative decides to buy on a twenty-point margin stocks which his broker would be willing to carry on ten points. He buys 100 shares of Southern Pacific stock, which he sells at a five-point profit, clearing about $465. He repeats the operation, making five and a half points, and has now increased his capital to nearly $3,000, and can trade in 150-share lots quite as safely as he could trade in 100-share lots at first. Either by "pyramiding" or by collecting his profits and reinvesting them he can, so long as all

goes well, rapidly increase the scale of his operations and correspondingly increase the rate at which his profits pile up. If all his forecasts are correct, there is no way in which a small capital can be built up into a large one so quickly. But if part of his trades result in losses, as they certainly will, the losses will be sure to come at the times that the trades are largest. On the other hand, if the first few trades result in losses and it becomes necessary to curtail the scale of operations, then on the smaller scale of operations a larger number of successful trades must be made in order to recover what has been lost. If the trades are originally so large that the trader is in fear of being sold out on a decline, or if stop-loss orders are used, the probability of making bigger average losses than profits is accentuated. In the author's opinion, this adjustment of the size of the trade to the volume of accumulated profits or losses is by far the most important cause of the excessive proportion of losers among speculators. The only real defense against it, aside from avoidance of the market, is to keep the trades so small in proportion to the capital actually used or available that the gain or loss from an accidental succession of good or bad forecasts will have no appreciable influence on the scale of operations which can safely be undertaken.

The probabilities of success in short-swing speculation in stocks are small.—In summary of our conclusions on this topic, it may be said that speculation in stocks, with a view to profiting by fluctuations in prices, affords one of the best examples of what the economist calls entrepreneurship, i.e., the quest of pure profit, an income made possible by the presence of uncertainty. The profit of the successful enterpriser in this, as in other forms of risk-bearing, depends on the presence of one of three situations—*knowledge* of the outlook superior to that of others who are rival seekers for profit from the same source, ability to *control* the factors on which the outcome of the venture depends, or sheer superiority of *luck*. A few major operators may have some degree of control over the movements of the whole market, and a considerable number of business men have some control over the prices of the securities of the corporations with which they are connected; the rest of the speculative fraternity must depend on knowledge or on luck. Of these, again, a few have access to "inside infomation" which enables them to trade with the odds in their favor, while the majority must rely on their superior sagacity in interpreting the news which they share with thousands of others. Under these circumstances the amount of luck involved in the outcome of a particular venture is

necessarily enormous, and the popular confusion of speculation with gambling has a large degree of justification.

Speculation for "long-swing" profits involves fewer unavoidable uncertainties than does speculation for the "short-swing."—The operations of the speculator who tries for large profits on a slow turnover are of an entirely different character from the type of speculation which has been discussed in the preceding pages. Changes of 40 or 50 per cent in the value of the higher-priced and safer securities, and of several hundred per cent in the lower-priced and more speculative issues, often take place within the course of a year or two, and traders who successfully forecast these changes may make correspondingly large profits without the futile and nerve-wrecking experience of watching for indications of the minor and quite inexplicable fluctuations which occur from day to day. It is true, of course, as in every other form of speculation, that it is impossible to profit except by *superior* luck or skill, that there is always a losing as well as a winning side, and that of a large number of trades the losses must always exceed the gains by the amount of the commissions, taxes, and other expenses, so that there can be no such thing as a permanent science of speculation. As fast as such a science became generally known it would become obsolete. In the present stage of development of the business, however, it appears probable that the fundamental facts, which are indeed accessible to all those who put their money into the market, are studied with care by a sufficiently small proportion of them so that there is a fair chance that those who do base their operations on something approaching the character of a scientific study will profit at the expense of those who do not. In so far as this is true, it is undoubtedly the operator for the long swing who has the advantage.

Analysis of the long-range outlook for security prices takes two forms, namely, the study of the outlook for individual firms and the study of the trend of the market for large groups of security prices. Those who practice the first type of speculation talk and think in terms of balance sheets, income statements, unfilled orders, changes in personnel, and similar evidence of the prosperity and prospects of individual firms. These are the bargain-hunters of Wall Street. Their special objective is to find securities of relatively inconspicuous corporations which have passed through a period of improvement whose effect on the value of the securities has been overlooked, so that the securities may be bought below their true value, or, vice

versa, to find securities of corporations which have a good reputation based on past performance but are going backward, so that the securities are selling at a price too high to be justified by the present outlook. Such traders have no interest in safe bonds or stable stocks once the public has become convinced of their safety and stability.

The methods of analysis employed by the bargain-hunting type of speculator are in general identical with those employed by capitalists who are looking for a permanent investment for income. Especially is the investor who is trying to secure yields above the market rate for safe investments similar in his objectives and methods to the bargain hunting type of speculator, for the security which continues to yield an abnormally high return is nearly sure to advance in price.

Investors for income, even those who are disposed to take speculative chances for the sake of the high yield, characteristically pay for their stocks in full and take them out of the market, while the individual who is planning to close out his trade on a market fluctuation is very likely to buy on a conservative margin. Moreover, the long-swing speculator is ready to take short side, in case the securities of a given corporation are overvalued, while the investors' bargains have to be found in cases where the securities are undervalued. This difference in methods of operation, however, does not involve any important difference in the method of arriving at conclusions concerning the strength of the corporations or the soundness of their issues.

Discussion of the methods used in analyzing the position of individual firms and the strength of particular securities with a view to profiting by changes in their prices is therefore deferred to chapter X, where attention is given to the whole problem of investment analysis.

The other type of long-swing speculation looks not at the record of the individual corporation but at the future of the market as a whole. Followers of this method talk and think in terms of the general level of prices, the effect of changes in the interest rate on the price of bonds, the amount of bank reserves, the volume of pig-iron production, and similar "fundamentals." For the purpose of this group of speculators, the most desirable stocks are those of corporations whose prospects are the best known and least subject to change from agencies peculiar to the corporation itself. In practice this generally means the safer securities, not so much because the

trader is averse to taking risks as because these conservative securities are most likely to run "true to form" in accordance with the outlook for business activity and for the money market.

This type of speculation depends entirely on the principles discussed in chapter vi, hence needs no elaborate discussion here. The most important barometers are those discussed in connection with the money market. The long-swing speculator who depends on this type of forecasting keeps out of the market, except as a conservative investor, for perhaps four-fifths of the time, returning to it only when he believes that there are clear indications of an early change in the trend. His plan is to buy high-grade preferred stocks and the very best common stocks early in a period of liquidation, shift to more speculative securities late in a depression and again shift to short-term notes, or if he is less conservative, take the short side of the speculative market, at the height of a boom. Diversification is imperative in this method of operation, as any one security is likely to fail to follow the trend.

The greatest difficulty in the way of this plan, aside from the extremely great difficulty in resisting the strong tide of optimism or pessimism which sets against an operator of this type, is the fact, to which reference was made in chapter vi, that the swings of the stock market are more numerous than those of the cycle of general business, and that there are no known formulas for forecasting the intermediate swings. Such a decline as that of 1917 is likely to catch the student of the cycle unprepared.

The two methods of long-swing speculation are often combined.—Analysis of securities and analysis of the trend of the stock market are distinct but not conflicting methods, and those who practice the latter, as a rule, practice the former also. That is, they attempt first to determine *when* to enter the market either as buyers or as sellers, then decide *what* to buy or sell by study of corporation reports and the outlook for specific industries. Such bargain-hunting methods presumably offer the largest chance of profit, but involve more risk than is involved in the simpler method of sticking to the stocks of the best-known corporations and depending on diversification for safety and on choice of times to buy and sell as a source of profit. The weakness of the combination method is that an error in *either* the analysis of the security or the analysis of the market will involve the operator in loss.

QUESTIONS

1. A bought 100 shares of stock on January 4 at 91 and sold on February 10 at 94. Figuring commissions at $25.00, taxes at $4.00 and interest at 5 per cent, what was his profit? How would the profit be affected by a change of the interest rate on 90 per cent of the amount to 10 per cent?

2. Examine the reports of the stock exchange trading in the press and list (*a*) the explanations offered for market changes; (*b*) the probable sources of information in regard to these reasons.

3. Summarize the indications available to you regarding the future course of stock prices. Estimate probable amount of error in your forecast.

CHAPTER X

THE ANALYSIS OF SECURITIES

As was noted in chapter vii, the investment of capital in businesses of others, or in government securities, presents one of the purest cases of an economic activity in which risk is the paramount consideration in determining the course of action. This is as true of the most conservative buyer of government bonds as it is of the most reckless stock-market operator. In each case, the problem is exactly the same; it is that of judging the probability of a favorable or an unfavorable outcome, and balancing the risk of loss against the return to be secured in the event of a favorable outcome, in order to determine which of two or more alternative employments of capital is the more attractive. The difference in the decisions of these two extreme types of conservative and reckless buyers and of the innumerable intermediate types, reduces itself to (*a*) a difference of knowledge of the relevant facts; (*b*) a difference of judgment concerning the conclusions to be drawn from those facts; (*c*) a difference of attitude toward the bearing of risk.

The formulation of an investment policy with regard to a particular security involves consideration of factors which may be analyzed as follows:

I. Income factors
- *a*) The rate of income yielded
  1. Direct yield
  2. Yield to maturity
- *b*) Prospective increases in the rate of return
  1. Changes in dividend rates; issuance of "rights"; liquidation of arrears, etc.
  2. Prospective increases in market values
  3. Gains through calling of securities at premium above purchase price
- *c*) Taxation

II. Factors of risk
- *a*) Security of principal
- *b*) Certainty of income
- *c*) Marketability
- *d*) Diversification

III. Indirect factors: control; prestige; access to desired information; social and moral objections to certain types of investment

The indirect factors are usually unimportant.—We may therefore dispose of the third group of considerations at once and pass to those which normally determine the decision. The cases where the direction of investment is determined by collateral considerations of a social, moral, political, or business nature are relatively few, are highly diverse in character, and are of so personal a character that hardly any important general statements can be made about them. In theory, a type of investment which is avoided by numerous investors on account of social and moral considerations must pay a higher rate of return to secure its capital, and therefore should be unusually attractive to those who are not disturbed by its unpopular aspects, but this factor is of no practical importance, so far as the investment market is concerned. It does have some influence in determining the rate of return for personal services and the profits of personally conducted businesses, but the investment market is too large and impersonal for prestige or social disapprobation to exert a visible influence upon it.

The yields afforded by safe securities admit of exact comparison.—The technique of methods of figuring direct and maturity yields, effects of taxation on yield, and similar items with regard to securities regarded as safe needs no discussion here. These are questions of mathematics, not of business judgment, and are fully treated in the general literature of investment as well as in that of mathematics.[1]

The essence of the problem of relating price to yield, where risk is disregarded, is a comparison between the present and the future value of a stated sum of money. The market value of a safe security is the sum of the present worths of all the amounts to be received—principal, interest, dividends, rights, premiums, etc., discounted at the market rate of interest, and conversely the yield is the rate of interest at which the market price compounded will amount to the various sums payable under the instrument by the time they are due and paid. In the case of securities which pay normal rates of interest at ordinary intervals, the investor is relieved of the labor of calculation through the use of bond tables, while for irregular payments formulas are available which make the calculation purely mechanical.[2]

[1] See, for example, Lagerquist, *Investment Analysis;* Chamberlain, *Principles of Bond Investment;* Jordan, *Investments;* Skinner, *Mathematics of Investment.*

[2] The use of these tables and formulas involves certain elements of error, none of which, however, are of great practical importance. The inaccuracies include the following: (*a*) *Loss of interest on interest accrued at the time of investment:* The

Tax exemptions, so far as they are known when investments are made, involve a simple modification of the mathematical results of calculations of yield. They would be of no practical importance if they affected all investments alike, since the problem is always one of a choice between alternative employments of capital, but if these are differently affected by taxation the difference may be of very great importance. This is particularly likely to be true if, as at present in the United States, the same security or income is taxed differently in the hands of different holders. Thus to an individual who pays surtax at a high rate on his income, a fully tax-exempt bond bearing 5 per cent interest is more attractive than a 6 per cent security without the exemption, while the small investor would suffer a loss if he selected the higher-priced security.[1]

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purchase price of bonds usually includes a pro rata share of the next instalment of interest; on this amount the investor loses interest until it is repaid at the next interest date. This results in a lowering of the actual yield, unless the securities are purchased on interest dates. The discrepancy is greatest if purchases are made at a time midway between interest dates. (*b*) *Decimal approximation:* The bond tables ordinarily used give interest yields accurate to the second decimal place. The maximum error which can result from this is $5.00 per $100,000 of principal in figuring interest for one year. Tables are available, however, which give results accurate to the cent for sums up to $1,000,000. (*c*) *Rate of interest earned by reinvestment of amortization funds:* Bond tables are constructed on the assumption that the payments to amortize the premium or discount are invested at the same rate as the yield on the security itself; this assumption is likely to be inaccurate. (*d*) *Time of reinvestment:* This error is similar to the one just mentioned. The tables assume that all payments in amortization of premium or discount are reinvested instantaneously; this is often impracticable. (*e*) *Interest interval:* The assumption of the tables is that the amortization payments will earn interest payable semiannually; if interest is collected quarterly or annually a slight error results. (Cf. Chamberlain, *op. cit.*, pp. 412–22.)

[1] In this connection, it may not be out of place to refer to the widespread fallacy that tax exemptions create a scarcity of capital for enterprises which cannot issue similarly tax-exempt securities, a fallacy which has recently appeared in highly respectable financial literature. Tax exemptions make a security less attractive to some investors and more attractive to others, but the financing of public enterprises through tax-exempt securities makes no larger drain on the capital resources of the country than would the financing of the same enterprises through securities subject to taxation. The tendency of tax exemption is to bring about a concentration of the securities so favored in fewer hands than would otherwise be the case, but unless it is believed that the public enterprises for which they are issued would not be financed at all without the exemptions it cannot be said that they operate to reduce the amount available for other enterprises, or to increase the rate other enterprises must pay for their capital. This statement is subject to a slight modification on account of the greater selling cost involved in securing capital from the small investors to whom taxable securities are most valuable.

Prospective changes in income, which are placed among the factors of income in our outline, may belong either here or in the category of risk factors, in accordance with the degree of certainty of their attainment. Future changes in dividend rates or in bond interest rates, the payment of accrued interest or instalments of principal, and other changes in nominal returns, if they are certain, are taken account of in figuring the yield or price at the time an investment is made, just as are the regular rate of interest and the amortization of the discount or premium on bonds. These payments involve no element of income to the investor, except the accrual of discount which was contemplated in the original price. On the other hand, prospective changes in income, whether increases or decreases, which are not regarded as certain, enter into the investor's decisions as part of the factor of risk. Premiums on redemption, profits on resale, gains at maturity, and other irregular items, both certain and uncertain, come into the calculation in exactly the same way as do the ordinary payments of dividends or interest. In each case, an income in the nature of interest arises from a discounting of the payments anticipated as certain, while economic profit or loss arises from the items not foreknown and hence not fully discounted in the market price at the time of purchase. The only difference is that the irregular items are less likely to be foreknown.

Let us consider next the factors of risk. *Security of principal* and *stability of income* are very closely related. In theory, in many types of security, the safety of the principal depends on the value of property specifically or impliedly pledged for the purpose, while income is more directly dependent upon the earning power of the issuing organization. Practically, however, the distinction is rarely important. The value of property depends upon its income-producing power, and in default of earnings or other income out of which to meet interest payments, asset values crumble away. In choosing between ample property values and ample earnings, the latter should always be given preference.

When the safety of principal and income in any investment is so great as to be a matter of general agreement, the yield is nearly sure to be low, but there are cases where by careful study and good judgment an income can be secured in excess of that usually obtainable on securities of similar strength. This is the chief object of investment analysis. Success in identifying such opportunities affords opportunity not only for profit in the form of an income yield in

excess of interest and replacement funds, but, also for profit from increase of market values, for securities rarely remain distinctly undervalued for long periods of time.

Marketability is the facility with which a security can be bought or sold. Since it is nearly always possible, however, to buy or sell a security of known income-producing quality at some price, the concept of marketability has been extended to mean the facility with which the security in question can be bought or sold at a reasonable price. The best test of reasonableness in price is the "spread" or difference between what the investor can probably get if he tries to secure a quick sale and the price he would have to pay to obtain additional securities of the same type. Marketability is largely a question of the size of the holdings. For the small investor, there are innumerable high-grade securities of attractive yield which have a "close" market for the small units in which he is interested, but there are very few securities which can be bought or sold in very large quantities without forcing the price materially upward or downward. Quotations for listed securities, and for those unlisted securities in which there is sufficient trade to maintain a quotable market, are the prices at which small lots—usually one hundred shares in stocks and $1,000 in bonds—are changing hands, and may be entirely misleading if used as indices of the marketability of large lots. Quotations for new securities which are in process of distribution are particularly deceptive, because such securities are regularly supported by standing bids from the distributing houses at the issue price. This gives the market the appearance of being very close and active. Investors who buy bonds in reliance on these quotations as an assurance of their ability to recover their capital at will are likely to find at a later time that the quoted market has disappeared and that the only outlet for the securities is through the distributing house. Such houses usually do protect their customers by making a market over their own counters, so that their issues are much more marketable than those of corporations which do their own financing or those marketed by irresponsible and transient underwriters.

Marketability is of importance for the investor who is attentive to the security market and wishes to shift his funds from one investment to another as the relative desirability of different issues changes. It is also of importance in case all or part of the invested funds are likely to be needed for personal support or for strengthening the finances of a private business. Marketability, as was noted above,[1]

[1] See p. 123.

is a device to give the investor protection against the risk of being unable to recover his funds when he wants them, without creating for the borrower a corresponding risk of being called on to repay them at an inconvenient time. For most investors, it is highly desirable to have some funds in marketable securities, but a waste of money to pay for this advantage for all one's funds. Sometimes the cost is negligible, however. The two principal devices for securing marketability are, first, the exchanges, and, second, the practice of investment banks of maintaining a market for securities which they have floated. So well developed are these and other marketing agencies that the mere fact of a high degree of safety, coupled with attractive income yield, is now usually sufficient to insure marketability in the case of so many of the investments that no one need pay a high price to secure the necessary liquidity in his funds. The two types of investment where this is least likely to be true are small real estate mortgages and the securities of little-known corporations which have been sold without the intervention of an investment banker. In these cases, it may readily be true that the risk, as estimated by those best informed, is very small, while at the same time the market is so restricted by the difficulty of obtaining this information that the security will lose much of its attractiveness for those who wish to keep their funds mobile. In such cases, the income return is likely to be high as compared to the risk of final loss, and the security correspondingly attractive to those who know the facts and do not require marketability in their investments.

The analysis of securities, to determine the degree of risk attendant upon their purchase, presents a problem of considerable difficulty, and one which differs greatly in character with respect to different types of security. So many legal, personal, and technical elements in the solution are inaccessible to the individual private investor that he is compelled to rely in large part, no matter how careful his own analysis, upon the findings of experts. Nevertheless, a knowledge of the elements of the method to be employed is necessary, if for no other purpose than to assist in the choice of counsel. The case is not dissimilar to the case for training in law as an aid to the business man. A layman's training in law cannot serve as a substitute for the services of a good lawyer, but it may be very useful as a means of aiding him to decide when the lawyer's services are really needed, and as a guide in distinguishing the trustworthy adviser from the charlatan. It is true in the investment field, even more than in the furnishing of legal

advice, that high respectability and pretentious claims of expertness and disinterestedness cannot be taken at face value. A little learning is a dangerous thing, but it is quite sufficient to unmask the emptiness of the claims of a large proportion of bond salesmen to a standing as expert advisers.

For discussion of methods of analysis, the bulk of investment securities may be classified as follows: (*a*) United States government and municipal bonds; (*b*) foreign government bonds; (*c*) railroad bonds and stocks; (*d*) public utility bonds and stocks; (*e*) industrial bonds and stocks.

Concerning the obligations of the United States government, those of most of the states, of the federal land banks, and of many of the municipalities of the country, the question of safety is hardly worth discussion. Conditions under which they would be defaulted or become unmarketable are quite thinkable, but they are conditions so remote that we have no means of forecasting their approach, and no way of selecting alternative employments of capital which are free from the same elements of risk. The fluctuations in the value of these securities depend on variations in the interest rate at which the payments are capitalized, not on factors of risk at all. The choice among these investments rests chiefly on considerations of taxation. Some are completely exempt from all taxes, others have exemptions restricted either to holders of limited quantities or to residents in states in which they are issued. These exemptions make them so much more valuable than securities not so exempt, to a small group of holders, that others frequently cannot buy them at a price where they are as attractive as are safe securities without the exemption feature.

In the case of most bonds of political subdivisions of the American states, the factor of safety is very high, but more caution is necessary in purchasing them than is the case with the issues of the United States and of the states themselves. The questions which arise in connection with them relate themselves, first, to validity; second, to legal limitations on the power to incur additional debt; third, to financial strength compared with the outstanding debt; and fourth, to character of the community.

The legal questions which arise in connection with municipal bond issues are so technical as to make it very difficult and expensive for the individual investor to satisfy himself in regard to them; hence, except in the case of small issues which are issued locally, recourse is

had to the intervention of an investment house which buys and distributes the issue, giving its customers the benefit of opinion of its legal counsel. This method enables all of the issue to be sold to scattered investors on the faith of one investigation, and, except in the case of the largest buyers, it is the only method which is at all practicable. To a certain extent, the same method is applicable to other phases of the investigation. The financial middleman takes the responsibility of collecting the data relative to financial resources, existing debt, limitations on further debt, purposes of the issue, etc., and assembles them in a convenient prospectus for the information of the investor. It is possible, however, for the investor to check up on some of these details, and probably rather better worth while that he should do so than is the case with the questions of legality and validity. So far as outright misstatement is concerned, the prospectus of a reliable investment house is presumed to be trustworthy, for the ethics of the business set a high standard of accuracy, but there is more likelihood of omission of significant qualifying detail than is the case with the opinion of counsel concerning legal requirements surrounding the issue. For example, it is not infrequently the case that the amount of debt per capita or per dollar of assessed valuation of a given political district is stated without reference to the fact that the same population or property is included within the bounds of overlapping or coextensive units which have independent debts, or authority to contract them.

Foreign government bonds have only recently come to occupy a large share of the attention of the American investing public. Under pre-war conditions, the securities of the leading nations of the world shared the distinction of rating as riskless securities. The effect of the war has been to destroy the credit of certain nations whose securities formerly enjoyed this high rating, and to inject an appreciable amount of uncertainty into the status of others whose credit is still high. It has also had the effect of shaking confidence in the absolute soundness of the bonds of countries which were not adversely affected by the war, by emphasizing the uncertainty of the political structure of modern civilization which underlies the value of the whole body of evidences of public debt of most countries whose securities enter the investment market.

In all probability, there is no considerable group of securities in existence whose record of payment of the interest and principal of their bonded debt is as likely to be unbroken, which yet yield

as high a return as the obligations of the neutral and former allied nations of Western Europe. Analysis in accordance with the usual methods of comparison of indebtedness, financial resources, and record of performance of obligations in the past, entitles them to the very high rating which they are accorded by professional financial rating bodies. Yet the market's rating is unfavorable, and the reluctance of investors to register, in actual purchases, the high rating which paper analysis affords, is not difficult to understand. The major risk in the investment of capital in the securities of the nations of Western Europe is the hazard of another great war, and this hazard is entirely incapable of mathematical estimate either as to the probability of its incidence or as to its probable effect upon the foreign bonds of the countries engaged in it. It seems highly probable that the course of events over the next decade or two will be such as to strengthen the credit rating of all the leading powers; and if so, the yields of their foreign debt at this time will seem a few years hence to have been incredibly high. It does not on the other hand seem impossible that international war, or internal disturbance, may reduce the obligations of other powers to the status of the bonds of Germany and Russia; the proper bond yield to discount this possibility is a matter of conjecture rather than of investment science.

In the analysis of corporate securities, the same contrast appears which we noted in the analysis of municipal issues, between the items which the individual investor can learn and discount for himself and the items in regard to which he is dependent on the specialized assistance of the investment banker or other financial specialist. There is this important difference, however, that, in the case of the industrial issues, the legal questions are relatively of less importance, and the general economic and financial factors which are accessible to the investor for use in forming an independent judgment are more numerous and more important, so that detailed examination of the problems which confront him is more likely to be of practical value. This is the more important because the services of the financial middleman are available chiefly in connection with new issues, while many of the issues concerning which the investor has an interest, are old issues which are no longer being pushed systematically by any financial organization.

The following outline suggests the most important items which should be taken into account in estimating the investment position of the securities of industrial corporations:

ELEMENTS OF STRENGTH IN INDUSTRIAL SECURITIES

- I. Position of the industry
  - *a*) Secular trend: Is the business likely to increase or decrease in importance?
  - *b*) Cyclical position: How is this line of business affected by the coming and going of prosperity?
- II. Position of the individual firm
  - *a*) Position in the industry
    1. Strength of competition, present and prospective
    2. Record of growth; evidence of progressive policy
    3. Reputation of firm in the industry
  - *b*) Financial position
    1. Current position
    2. Financial history
    3. Banking and underwriting connections
  - *c*) Personnel
- III. Position of the individual securities
  - *a*) Priority of lien; adequacy of security; protective provisions
  - *b*) Market history
  - *c*) Technical factors: floating supply, market interest, manipulative activity, etc.

The position of the industry is usually susceptible of more adequate analysis than is the position of the individual firm. Industries rise and decay as do individual firms. The most profitable investments have been those which have been made at an earlier stage in the history of a new and successful invention. It does not follow however that a policy of seeking such opportunities is a profitable policy. For every case where fortunes have been made by buying the securities of corporations formed to develop new industries, dozens of ventures, which at the outset appeared equally promising, have swallowed the capital of their projectors without adequate return. The history of the telephone, the telegraph, and the condensed-milk industry is constantly kept fresh in the minds of investors by promoters of new concerns, while the financial failure of liquid air quickly fades from memory. Even where new industries have been successful in the end, it is frequently true that the original investors have failed of a reward, or that the major returns have gone to those who came to the rescue of the enterprise when it had passed its initial difficulties but exhausted its capital in so doing.[1]

[1] Cf. Conyngton, *Financing an Enterprise*, chaps. xii, xiii.

On the other hand, the fact that an industry has a long and impressive record of profitable operations is not sufficient to make it a desirable field for the investment of additional capital, or even for the purchase of securities representing investment already made. The price at which such securities are obtainable is usually controlled, among other things, by the past record of the industry, and if the industry has passed its zenith, investments in it are likely to be overvalued. This is true not only of cases where the market for its output is actually dwindling but also of the less obvious cases where the rate of growth is falling or is generally overestimated, so that an overbuilt condition threatens.[1]

If the growth of an industry has been determined in part by the development of a consumers' fad, as was the case with the bicycle industry in the middle nineties and the radio industry in 1922, there is no accurate method of forecasting its development. Collapses, due to the appearance of a superior technique of production or the invention of substitute products of superior efficiency or lower cost, are also impossible to foresee. They are among the inherent risks of industry, which can readily be seen to be greater in some industries than in others, but cannot be eliminated by research.

The decline in profitableness which results from an overbuilt condition, however, can frequently be foreseen. Statistics of consumption of basic commodities for the leading countries are available, and the producing capacity of most industries is also a matter of approximate knowledge. During a time of prosperity, whether the general prosperity which marks the culmination of an upward swing of the business cycle or a boom in a specific industry caused by war orders, by a consumers' craze, or by the development of new markets for the product, there is always great danger that an overinvestment will take place. The result of such a contingency is not merely to waste the capital of those investors who come in last or choose the least favorable conditions for their investment; it is often to create a condition of overcompetition which makes it difficult for any concern in the industry to make satisfactory returns on its capital.

In general, investments in the securities of corporations which have monopolistic advantages are the safest, and those in industries where competition is keen are the riskiest. Competition has decided advantages from the standpoint of protection of the public interest, but monopoly has correspondingly great advantages from the stand-

[1] Cf. J. M. Clark, quoted above, pp. 79–81.

point of investors. This applies not only to those concerns which are protected by patents or franchises or by control of limited natural resources. Indeed, it is often the case that such corporations are singled out as the subjects of attack by legislators and by the agencies which shape public opinion to such an extent as greatly to lessen the strength of their position. If this is not the case, the price to be paid for their securities is likely to discount the strength of their position so that the investor secures a safe investment, but one which yields a correspondingly low return. Almost as high a degree of safety, without so much danger of attack, and often without the necessity of paying so high a price for it, is obtainable through investment in securities of concerns which, without possessing actual monopoly power, yet have attained such a position of leadership, either through early start, unusually competent management, high reputation of product, or successful advertising, as to render them relatively free from the effects of competition. The advantage which such concerns enjoy is particularly apparent in periods of liquidation and depresssion. At such times, competition in most lines is abnormally keen, so that even those concerns which secure a satisfactory volume of orders find it impossible to make a good margin of profit, but the concerns which are fortunate enough to have a position of monopoly or semi-monopoly, though they suffer a decline in the volume of orders received, are able to keep prices at a level which insures a satisfactory profit on the business actually done.

Industries differ widely in the extent to which their volume of business and their profit margins are affected by the business cycle. It is not necessarily true that an industry in which there are violent fluctuations of prosperity and depression is for that reason either more or less profitable than a steadier industry, but it is necessary to take careful account of this factor in appraising the financial record of the individual concern for two reasons. In the first place, the securities of corporations engaged in lines where the fluctuation is great are to a considerable extent valued upon the basis of the immediate outlook, rather than upon the average of good and bad times which determines their real income-producing power. Hence they are very likely to be overvalued in good times and undervalued in bad times, and the investors' decisions should be made with this factor in mind. In the second place, many industrial corporations and not a few underwriting concerns are not overscrupulous about choosing financial data in such a way as to make the best possible showing for the concern.

Hence, prospectuses which advertise securities on the basis of the average earnings for the preceding three or five years, or the balance sheet at a given time, should be scrutinized with care to see whether they represent the showing during an abnormally favorable period of the business cycle.

The extent to which a given industry is subject to the influence of cyclical movements depends chiefly on the character of the product. Consumption goods are affected quite differently from producers' goods. Among consumers' goods, the demand for luxuries fluctuates more than that for necessities, but even so-called necessities show plainly the effect of changes in income which result from prosperity and depression. More important is the classification into goods which make up a significant part of the budget and those which are trifling in importance from the standpoint of the amount spent by any one user. Matches, for instance, show much less evidence of the cycle in their market than does meat, though a proportionate reduction in the consumption of matches would probably involve much less real sacrifice for the community.

Producers' goods fluctuate in demand with the demand for the product, but this fluctuation is greatly accentuated in certain lines by the producers' practice of specializing in the manufacture of parts and supplies for the use of other manufacturers who produce themselves enough to supply part of their needs. In case, for instance, a manufacturer of automobiles is equipped to produce a certain part in sufficient quantity to supply his needs when his plant is running at half-capacity, a decline in his business from 100 per cent to 75 per cent of capacity will result in a reduction of about 50 per cent in his purchases, assuming that he does not produce or purchase for stock, and a 50 per cent reduction in the volume of his orders will take him out of the market as a buyer entirely.

Still more important, in many cases, is the question of perishability of product. If it is possible to store up a product for future use or sale at times when scarcity or rising prices are expected, the fluctuations in actual consumption will be greatly exaggerated in the market demand for the product. For example, the demand for bread shows little effect of the cycle, but that for flour shows it very clearly.

Another important point is the readiness with which prices of the commodity or service sold reflect changes in market conditions. Lines in which selling prices are fixed by law or custom have a cycle of prosperity inverse to that of most businesses, their costs going up in times of

prosperity more than their incomes, and vice versa. Gold-mining and the manufacture of artificial gas are illustrations. This point is of importance not only in connection with the securities of corporations engaged in these industries but also in judging the position of industries which sell them equipment and supplies. Manufacturers of electrical equipment are relieved of part of the effect of the business cycle by the fact that their sales to public utilities are likely to increase at times when their sales to industrial concerns are at a minimum.

Analysis of the financial position of industrial corporations always involves a large margin of error.—Whereas the facts concerning the present condition and outlook for whole industries are in large part common knowledge so far as they are available to anyone, the facts concerning the position of individual corporations are highly confidential, and are imparted to the investing public only in so far as the management deems it good policy to do so. Many large and apparently prosperous concerns publish no information concerning their finances, and this in no way reflects upon their standing. Concerns which desire to secure funds from a wide range of investors, however, through the sale either of stock or of bonds, are practically compelled to give out a certain amount of information, and some firms consider it good policy to publish financial statements even though they are under no immediate pressure to do so. Of these reports, by far the most important, so far as investment analysis is concerned, are the balance sheet and the income statement. These are worthy of careful study by the prospective investor, first, because the elements of strength or weakness do not all lie on the surface of a perfectly unbiased report, and, second, because reports are often colored to suit the purposes of the management, and evidence of this coloring may sometimes be detected, particularly if a series of statements for successive years is available for purposes of comparison.[1]

The following questions suggest some of the factors which the careful investor, or the speculator operating for the long swing, will take into consideration in analyzing the reports of industrial corporations:

[1] It must not be overlooked that the bias is not always in the direction of making the corporation appear more prosperous than it really is. For purposes connected with market manipulation, or for the sake of the effect upon competition, in recent years also on account of income taxation, it is frequently desirable to make the prosperity appear less than it actually is.

A. QUESTIONS ON THE BALANCE SHEET

1. *At what time was the balance sheet drawn?* For instance, does it reflect a peculiar seasonal situation? Does it reflect the actual position or that which will obtain after a proposed issue of new securities? The practice of issuing balance sheets "adjusted to show the effect of the present financing," which was popular in connection with the distress flotations of 1920–21, operates frequently to cover up a very weak current position. By subtracting the amount of the new issue from the fixed liabilities and adding a similar amount to the current liabilities, or subtracting it from the cash, an approximation of the current position can be obtained.[1]

2. *How are the fixed assets valued?* This information is not always obtainable, but can generally be secured in connection with new issues. In analyzing statements of corporations which are not in the market to sell securities, some idea of the valuation method can sometimes be gotten by comparing the valuation of fixed assets with that of other corporations engaged in a similar line of business, or checking through a series of statements to see whether the growth has corresponded to the growth of other items. Sudden increases in value assigned to fixed assets frequently indicate a desire to cover up the depletion of surplus through business losses.

3. *Are depreciation reserves adequate, and are the depreciation allowances consistent?* Manipulation of the depreciation reserve is a favorite method of producing misleading results in the calculation of net income. In many cases, however, it is impossible to tell accurately whether this has been done, because the only figures given are for depreciated value of assets.

4. *Are the figures for good-will reasonable?* This item is of less importance than it is frequently judged to be. There is a strong prejudice in favor of a "clean" balance sheet with no intangible assets, but if the good-will item is shown separately so that it is possible to see what the tangible assets amount to, the inclusion of a large item of good-will offset by a correspondingly large item of sur-

[1] For example, a prospectus of a bond issue, gotten out by a reputable bond house early in 1920, emphasized by the use of black-faced type the current ratio of 18:1, obtained by applying part of the prospective net return from the bond issue against current liabilities and adding the remainder to the cash. The actual ratio was apparently about 1:1. In this case, it happened that the sale of the bond issue was never completed.

plus, is an item neither of strength nor of weakness. If there is a large good-will item and the surplus is not sufficient to offset it, the stock is shown to represent wholly or partially a capitalization of actual or anticipated earning power and not an actual investment. In the case of a going concern, even this does not of itself indicate a weak position. The earnings are the significant item. In the case of a new company with no record of earnings, a large item of good-will, offset by stock issues, indicates that the stock has no present value, and the risks of the enterprise will fall on the prior lien securities, which will nevertheless have only a limited claim to the earnings.

5. *Are the figures in the investment account satisfactory?* The investment item is frequently difficult of interpretation. If small, it may be disregarded, but in the case of a holding company it is important to know on what basis the securities of subsidiaries are valued. Sometimes advances to subsidiaries which are uncollectible are carried as investments, and sometimes the item represents fictitious book values of subsidiaries, securities which have no market, and whose value to the parent company bears little relation to the figure at which they are carried into the balance sheet. Information concerning this item is not readily obtainable; in case it is not to be had, large figures for investment should be given little weight in evaluating the strength of the company.

6. *What is the ratio of quick assets to current liabilities?* This item is more important in analyses made for use in passing on applications for short-time credit than it is in investment analysis. Two to one has been widely accepted as a normal minimum ratio, though the significance of a variation from this ratio is quite different at different times of the year and at different stages of the cycle. Wide variations from this ratio are not necessarily indicative of abnormally weak or strong positions, but there should be some satisfactory explanation for them.

7. *Is the inventory account satisfactory?* Excessive inventories are a source of weakness in times of falling prices and of strength in times of rising prices. It is this fact that makes the current ratio (ratio of quick assets to current liabilities) of such different significance at different stages of the cycle. The item has very different meaning, moreover, in the case of corporations which hold inventories for sale from its significance where the inventories are used up in furnishing services whose value does not fluctuate with changing values of the inventory.[1]

[1] See p. 193.

8. *Is the net working capital adequate?* Corporations which show a narrow margin of working capital above absolute requirements in times of prosperity are apt to be the first to collapse in times of adversity.

9. *Does new financing appear to be imminent?* This question is closely related to the preceding one. It is usually poor policy to buy the stock of a corporation just prior to the announcement of new financing, particularly in times of liquidation and depression, unless the credit of the corporation is very good indeed.

10. *What is the character of the surplus?* Does it seem to represent profits available for distribution, profits permanently reinvested, premium from stock sales, or capitalization of hopes through inflation of the good-will or fixed asset items? Some corporations habitually transfer surplus permanently reinvested to the capital account through stock dividends; others allow it to remain in the surplus account. From the standpoint of the preferred stockholders and the bondholders, the former policy is preferable as it makes it impossible to distribute the accumulated surplus to stock-holders through cash dividends.

B. QUESTIONS ON THE INCOME STATEMENT

1. *Is the income ample to cover the requirements?* These include interest, dividends, sinking funds, amortization of discount, etc., on the security under consideration, together with all prior claims. In most lines of business, the income in a normal year should cover interest requirements on a given bond three or four times to entitle it to a conservative rating. Preferred stocks require a higher margin of safety to entitle them to an equally good rating, as they are likely to have their lien impaired by the issuance of bonds with a prior lien. Even when this is apparently rendered impossible by stipulation in the indenture covering the preferred stock, there is always the probability that bank loans and trade indebtedness will accumulate, and these claims always come ahead of the claims of the stock. When this has taken place, if the corporation has difficulty in meeting maturing claims, the preferred stockholders are likely to be asked to sanction a bond issue to refund the indebtedness, and they can gain no advantage by refusing. Moreover, in case of reorganization, it is customary to treat preferred stock in much the same way as common, no matter how amply its priority has been protected by stipulations which appear to make it almost the equivalent of a bond.

Common stocks should earn twice the dividend, if the dividend is capitalized in the selling price at anything like the going rate for safe investments. There is much more variability in the ratings of common stocks, however, for the price discounts all probable future increases of earnings, and this factor may justify a price far in excess of what the present earnings or dividends would support.

2. *Have inventory losses been carried into the income statement?* During the recent period of falling prices, many corporations charged their inventory and other extraordinary losses direct to surplus or to reserves set up previously, while others charged them to current income. Either method is defensible, but in comparing the showing made by different corporations it is important that a difference of policy in this regard be not overlooked.

3. *Have earnings been manipulated by abnormal charges to reserves?* Reserves are of two classes: first, the reserves for depreciation, bad debts, and similar items, which represent an actual correction of the book value of asset items, and, second, proprietary reserves, such as "Reserve for Contingencies," "Reserve for Inventory Shrinkage," "Dividend Reserve," which are merely ear-marked surpluses. By making charges to the first class of reserves unduly small, the earnings may be padded to conceal the effects of bad management or misfortune; by making them excessive, or by making charges to the second class of reserves against earnings, instead of against surplus, the earnings can be made to appear smaller than they really are. Examination of the reserve accounts will often make such manipulation evident.

C. QUESTIONS ON THE FINANCIAL HISTORY

1. *Has the growth of gross and net earnings kept pace with the growth of the industry?*

2. *Has the working capital been increasing with the growth of the business?* An increase of surplus or of capital accompanied by a decrease of working capital means that earnings have been made in the form of increased quantity or higher valuation of fixed assets. Such absorption of earnings in plant is not necessarily unfavorable, especially in a rapidly growing business, but it may mean that a showing of profits is being made through charges to betterment of what are really repairs, or through excessive valuation of fixed assets. It is much easier to verify the bona fide character of earnings accumulated in quick assets than of those which appear in plant gains. More-

over, even if the gains so shown are actual, there is indication of danger that the business is expanding too rapidly for safety.

3. *Has the dividend policy been liberal or conservative?* From the standpoint of bondholders and preferred stockholders, a policy of dispensing dividends freely to common stockholders is objectionable; from the standpoint of the buyer of common stock, the answer is not so simple. Excessive liberality indicates a weakness, but the question what constitutes excessive liberality depends on such circumstances as the variability of the earnings, the necessity of maintaining large reserves against inventory and credit losses, the amount of borrowed capital used, concerning which no brief general statement is likely to be of value.

D. QUESTIONS ON CORPORATE POLICY AND PERSONNEL

1. *What is the character of the banking connections?* Naturally, the fact that a corporation's securities are underwritten by the leaders in the business of handling securities of the type in question is a favorable point. The absence of such connections, however, does not condemn a security; it merely makes it necessary to seek a reason for their absence. Some excellent issues are brought out without the aid of underwriters, because they are too small to be attractive to high-grade houses; others, because the concerns issuing them feel strong enough to dispense with the investment bankers' support.

2. *Does the management seek publicity for its financial successes?* As a rule, it is an unfavorable sign if the management seems anxious to secure publicity for its large profits. Very profitable enterprises are more likely to wish to avoid undue publicity because of its effect in stirring up competition and also because it increases public pressure for lower prices for their products. However, there are very successful firms which pursue a policy opposite to that of the majority, making use of their financial success as a means of attracting attention to the merits of their products. When the management is unusually willing to have its profits advertised, it creates the suspicion that a market is being maintained on which insiders may sell out their holdings but such suspicion is not always justified.

3. *Have dividends been increased recently more than earnings seem to justify?* Or have extra cash dividends and stock dividends been granted? The bearing of this question, from the standpoint of the bondholder and the preferred stockholder, has been indicated in connection with other questions. The receipt of dividends is of course

the only thing that gives value to stocks, so that increases, if there is a probability of their being permanent, are favorable. Very large distributions, however, are likely to be interpreted as being more favorable than they really are. During a period of rapid expansion, when large profits are being earned and the volume of business is increasing, corporation managers are reluctant to disburse unusually large amounts to stockholders for the reason that the funds are at that time especially valuable to the business. It is at the end of a period of high prosperity that accumulated earnings can best be distributed, and extra dividends are therefore an index of past, rather than of prospective, prosperity.

Moreover, there are indications that stock dividends, extra dividends, and increases of cash dividends have sometimes been used as a cover for the distribution of stock by insiders to the general public. The experience of 1907, 1911, 1917, and the early part of 1920, upon all of which occasions unusual increases in dividends were accompanied for many months by declining stock prices, indicates that the good news of dividend increases was regarded by large holders as an opportunity to dispose of their stocks.

Railway and public utility securities present an entirely different problem.—In the first place, the capitalization of railways and utilities is usually more complex than is the financial structure of industrial companies. One principal reason for this is that there is less variation in the net earnings of railways and utilities. It is therefore possible to issue underlying bonds which offer a very high degree of safety, since there is slight possibility of such great decline of earnings as will imperil them, while at the same time part of the necessary capital must be secured through the offer of speculative inducements because there is no assurance of sufficient income to pay a return on the entire capital. Moreover, in the case of the railroads, there are usually historical reasons for the existence of numerous bonds secured by liens on specific parts of the property, and also for numerous strata of bonds superimposed upon the same property. Without attempting to work out a detailed method of analysis of railway and utility securities, the following points of difference from the industrials may be noted:

1. *The property account is of even less importance in railway and utility statements than it is in industrial statements.*—The bulk of the property is not salable for any other purpose than that for which it is being used, and the separate parts of the property have much less

value as separate units than they do as a single property. The security of the investor depends almost entirely on the continued earning power of the corporation.

2. *The current assets and current liabilities are of much less importance than in industrial statements.*—The inventories are not held for sale; the accounts receivable are small; and it is rarely the case that sufficient capital is obtained through bank loans to make the problem of meeting maturities of short-time obligations a serious one.

3. *Conversely, the proportion of fixed charges to net income is much more important than it is in most industrial corporations.*—The cost of capital is always an important item, and if too large a proportion is obtained through securities bearing a fixed charge, some sort of reorganization to scale down those charges becomes necessary. Fixed charges usually play a less important part in industrial failure and reorganization.

4. *Relations with public authorities are of greater importance in the case of railways and public utilities than in the case of industrials.*—Typically, the rates charged by utilities are fixed by some public authority or are subject to review, and the demand which they serve is so inelastic that their income is, to a large extent, determined by the rates they are allowed to charge. Hence changes in the attitude of legislatures, courts, and of the public are of primary importance.

5. *Railway reports are more uniform and easier of interpretation than industrial reports; public utility reports less so.*—The uniform system of accounting prescribed by the Interstate Commerce Commission makes it possible to secure prompt and intelligible information concerning the finances of the railways. The only serious discrepancy between one such report and another arises from the item of maintenance. Formerly, there was wide difference of policy between different roads as to what should be considered as expense and what charged as betterment. Uniformity in this regard has been secured in recent years, but there is still a considerable margin of uncertainty in the figures for maintenance and consequently in the net earnings, on account of the extent to which maintenance can be deferred or hastened.

Public-utility reports are less uniform, and are frequently very difficult of interpretation because of the lack of adequate information concerning the amounts allowed for depreciation, particularly in the accounts of subsidiary companies of large holding companies. The same ambiguity occurs in the reports of industrial corporations, but

it is of more importance in the case of the utilities on account of the very large amount of fixed capital employed.

Finally, it remains to consider the factor which is most important of all, but most difficult of access for the small investor—the character of the management. Upon the ability and character of the men to whom the management of his capital is intrusted, the investor must rely for honest and capable service. This factor, however, cannot be learned from the perusal of annual reports. Some information concerning the personality and past performance of prominent industrial leaders may be gleaned from the financial press, but the reader is usually uncertain as to the extent to which the information so obtained is inspired by the leader himself, or by those who have a personal interest in promoting his reputation. Something can be learned by inquiry through bankers, bond salesmen, and brokers, but much time and experience is necessary to sift the wheat from the chaff in current gossip concerning men prominent in the world of finance.

The best index to the character and capacity of an industrial leader is the record of the corporations he has led. The man who has been for years connected with the management of corporations whose record of growth, progressive policy, fair treatment of investors, and financial stability is good, comes to command the confidence of the business community, and his name lends prestige to weaker or newer businesses with which he may later associate himself. Inferences drawn from the reputation of men who are associated with the management of otherwise doubtful enterprises are by no means infallible, but in most cases no better guide is available.[1]

Diversification is a very effective method of reducing risk, so effective, indeed, that it may well be said to be the foundation principle of investment. No analysis of financial statements and market history is adequate to insure safety, unless the investor is content with the return obtainable from the highest grade of government bonds. As soon as an effort is made to secure a larger return on one's capital than that obtainable through savings bank deposits and purchases of liberty bonds and war savings stamps, the factor of risk appears: risk that the investor's analysis may fail through negligence or misunderstanding on his part; risk that financial reports may be deliberately mis-

[1] In relying upon this sort of information, however, care must be taken to avoid placing confidence in the reputation of men who are only nominally associated with the management, or who, though once active, have ceased to play a dominant rôle in the corporation's affairs.

leading; risk that quite unpredictable misfortune may overtake borrowers whose position appears to be the strongest.

Against all these dangers, diversification offers the largest measure of protection. The wider the range of investments the less is the probability that all or the larger portion will turn out to be weaker than they appear to be. This is simply the application of the law of large numbers; the elimination of risks through combination.[1]

To obtain the maximum benefit of distribution, it is necessary not merely that the number of separate securities or separate borrowers represented shall be large; it is equally important that they shall represent enterprises exposed, as far as possible, to different hazards. If possible, the diversification should be wide enough so that the failure of any one obligor, or of any group exposed to similar hazards, will not create serious embarrassment. A properly diversified list will contain representatives of all the leading classes of investment securities; and within each group will contain representatives of as diverse geographical, industrial, and commercial conditions as is reasonably possible. The inclusion of representatives of all the different standard types of security is necessary in order to secure protection against the effects of a decline of the investment standing of some one entire group, such as happened in the case of the public utilities and also in the case of European government securities during the Great War. Geographical diversification insures protection against the effects of crop failure and reduces the effect of the business cycle. Diversification of industries represented also reduces the effect of cyclical changes and of the collapse of individual industries. Bonds are in general more conservative investments than stocks, but a sprinkling of industrial stocks serves as an offset to the losses incurred by investors in times of rapidly rising prices, for dividends on industrial stocks are likely to increase at such times, while bond interest remains stationary in nominal amount and declines in real purchasing power.[2]

In grouping the securities of railroads or industrial corporations, an additional element of safety can be secured by balancing the securities of strong competitors against one another, so that a serious decline in the income of one, if caused by competition, is likely to be offset by a gain on the part of the other.

[1] See chap. ii.

[2] The experience of many colleges and other endowed institutions during recent years has emphasized the desirability of balancing the customary heavy investments in fixed income securities with a proportion of securities whose income-producing capacity will be likely to increase with the level of prices.

If investments are selected in such a way as to secure actual independence of risks, the probability of total loss becomes negligibly small with a very short list, but proper diversification is not attained till the number of independent risks is large enough so that any probable accidental combination of unfortunate developments in different fields will not create serious embarrassment. For example, if a fund is divided between four securities, and the probability of default on any one of them is figured at one chance in twenty, there is only one chance in 160,000 that all will fail, assuming that the causes of failure are fully independent, but the probability that one or another will fail is about three in sixteen. If the investor is dependent upon the income of the fund to meet pressing needs, good policy would not sanction his running so great a risk of losing one-fourth of his principal. Either the fund must be distributed more widely or safer securities must be chosen. This illustration points to the reason why well-to-do investors often purchase higher-yielding securities than are recommended for small buyers. The larger lists permit a wider diversification, so that the failure of any one member of the group does not eat up all the income from the rest. Of course the probability that there will be some losses also increases with the number of items included in one's purchases, but the longer the list the closer the actual loss is likely to run to the amount which is anticipated and discounted in the purchase price. As was noted in chapter vi, investors who do not command a sufficient amount of capital to secure diversification in their own investments can obtain it indirectly through the mediation of savings banks and other financial institutions. The recent development of the "baby bond" and of stocks of low par value has made it possible for the small investor to choose from an attractive list of offerings and obtain much more satisfactory diversification than was the case a few years ago. The trouble and cost of investigating the soundness of securities is as great for the buyer of $100 worth as for the buyer of $5,000 worth, however, so that the large investor can afford to spread his investments somewhat more widely than can the small buyer.

CHAPTER XI

SPECULATION IN COMMODITIES

In a survey of the methods used in speculation in commodities, our attention is directed at the outset to a distinction similar to the one we observed in our study of the security markets, between the listed and the unlisted securities. This is the distinction between commodities which are traded in through organized exchanges and those which have no such market. In both cases the organized market is not essential to speculation and there is, in fact, a considerable speculative interest outside the field which they cover, but the speculator's tasks of executing trades, obtaining information, and financing his operations are greatly simplified by the exchange organization. Because of the concentration of speculative interest in them, our attention will be directed primarily to the characteristic features of the organized commodity markets and the methods used in operating through them.

In its external features and in many of its methods of operation, the typical commodity exchange is very similar to the stock-exchange organization which was described in a preceding chapter. A commodity exchange is an organization of brokers, dealers, and speculators, formed for the purpose of facilitating the business of buying certain staple commodities and, incidentally, to promote the common interests of its members through publicity, legislative, informational, and such other services as it may be practicable for it to render. The organization of the exchanges, the method of executing trades, the ticker system, and most of the rules and practices are very similar to those which have been described in connection with stock-exchange trading.

The most distinctive feature of the trade, through the speculative produce exchanges in the United States, is the *futures contract*. The peculiarities of this contract explain most of the differences between grain or cotton speculation and stock speculation. A futures contract may be defined as a contract for the sale of a stipulated amount of a specified grade of some commodity at a fixed price at a future date. Typically, it contains the following special features: First, the specific provisions of the contract are determined by the rules of the exchange

the actual bargain being made in a highly informal way. The rules and practices of the exchange are implied in each bargain, in the absence of a specification to the contrary. Second, the futures contract is a *basis contract*, which means that the commodity delivered under it may be either of the "contract grade" or of some other grade which may be delivered at the seller's option at a price above or below the contract price. The method of determining the differential varies in different exchanges. Third, the seller is given the option of making delivery at any date between specified limits; in this country at any date within a specified calendar month. Fourth, the enforcement of the contract is insured by a provision that a specified amount known as a margin shall be deposited with some third party by each of the contracting parties. These deposits are intended to protect the seller against a refusal of the buyer to make good his contract in case of a fall in prices, and, conversely, to protect the buyer against a default on the seller's part in case of a rise. Fifth, delivery is effected by delivery of warehouse receipts for the commodity, which must be stored in a specific place—usually in approved warehouses in the city in which the exchange is situated.

While a futures market is not essential to commodity speculation and has other uses besides promoting speculation, such a market is extremely convenient for the speculator's purposes. Its great advantage is that until delivery date arrives, the buyer does not have to pay for the goods which he has bought, nor does the seller have to own them. This tremendously simplifies the financing of commodity speculation. The speculator who in October buys wheat for May delivery need not worry about paying for it until May comes, and if he sells before that time can have the grain delivered direct to his buyer by the person from whom he bought, so that he does not have to advance any capital except for margin purposes. On the other hand, the speculator who believes that wheat is likely to fall in price can sell in the fall for May delivery and need not purchase the wheat to fulfil his contract until the last day of May. Whenever he buys he can have settlement made direct between his buyer and his seller, without any responsibility except to keep his margins good and settle his losses.[1]

[1] Commodity speculation can also be carried on through the use of warehouse receipts for commodities in storage, in much the same way that stock speculation is carried on through the transfer of certificates, the warehouse receipts being loaned for short sales and the buyers paying cash for them. This method was used before the general development of the futures market. Under this system

The following are the futures markets in the United States, as listed by the Federal Trade Commission:

TRADING IN CEREAL FUTURES—GRAINS TRADED IN ON EACH EXCHANGE IN THE UNITED STATES

Chicago	Wheat	Corn	Oats	Rye	Barley
Minneapolis	Wheat	....	Oats	Rye	Barley
Duluth	Wheat	....	....	Rye	....
Milwaukee	Wheat	Corn	Oats	....	....
Omaha	Wheat	Corn	Oats	....	....
Kansas City	Wheat	Corn	Oats	....	....
St. Louis	Wheat	Corn	Oats	....	....
Toledo	Wheat	Corn	Oats	....	....
Baltimore	....	Corn	....	....	....
San Francisco	....	....	Oats	....	....
Chicago Open Board	Wheat	Corn	Oats	....	....

There is also at Duluth a futures market for the special variety of wheat known as durum. There is similarly a market for kaffir corn (including milo maize and feterita) at Kansas City. In addition to the food grains, flax futures are traded in at Duluth. Toledo has futures markets for the several important kinds of hayseed—clover, alsike, and timothy. The New York Produce Exchange has a futures market in cottonseed oil. At New York, also, and at New Orleans are important markets in cotton futures. Butter and eggs, prior to the entrance of the United States into the World War, were traded in through a call for futures on the New York Mercantile Exchange, the New York Butter and Eggs Exchange, and the Chicago Butter and Egg Board. Provision futures (pork products) are traded in at Chicago.[1]

To this list may be added the futures market in coffee and sugar maintained by the New York Coffee Exchange, and the recently established market for cottonseed oil on the Chicago Board of Trade. Leading futures markets of other countries include a very active cotton market in Liverpool, silk and rice markets in Tokyo, and large wheat markets in Winnipeg, Rosario, Buenos Aires, and Liverpool. A great many other commodities have at one time or another had futures markets of more or less importance.

The qualifications of a commodity which adapt it to future trading are: first and most important, that it shall be susceptible of

the speculative buyer has to meet the cost of storage, insurance, interest, and other carrying costs, and commissions are higher than in the futures market, hence the method has gone out of use except for commodities not traded in through the exchanges.

[1] *Report of the Federal Trade Commission on the Grain Trade*, V, 31.

accurate classification into a fairly small number of grades, so that buyers may have a definite idea of what they are likely to have delivered to them; second, that there shall be a large enough interest in the commodity so that would-be buyers can be fairly sure of finding sellers at any time, without bidding up the price out of reason, and vice versa, that sellers shall be able to find buyers at reasonable concessions in price; and third, that the supply of the commodity physically available shall under all ordinary conditions be quite large. This last qualification is necessary, in order to protect sellers against the danger of finding the entire available supply bought up and held off the market when they try to obtain the goods to fulfil their contracts.

To illustrate the customs and methods of future trading, the wheat market on the Chicago Board of Trade will be described in some detail. The Chicago Board of Trade is an incorporated body of about 1,600 members. As noted above, it provides facilities for trading in five grains, in cottonseed oil, and in pork provisions. The speculative trade in rye, barley, and cottonseed oil, however, is quite negligible in volume, and oats, short ribs, and pork also comprise only a small part of the trading. Wheat and corn make up the bulk of the grain trade, and lard is the speculative leader in the provisions group.

The management of the Board of Trade is sufficiently similar to that of the New York Stock Exchange, described above, to make a detailed description unnecessary. In theory, the membership is not closed, a contrast to the organization of the New York Stock Exchange, which it will be remembered, is limited to 1,100 members. In practice, however, no new memberships are created. The market price of a seat is usually in the neighborhood of $7,000 to $8,000 while the fee for entry through the creation of a new membership is $25,000. Hence the "open" character of the membership is more a theory than a practice.

The standard futures contract of the Chicago Board of Trade provides for trading in units of 5,000 bushels of grain, although 1,000-bushel lots of wheat are handled through a special arrangement. Contracts are made orally just as is the case in the stock market. The small number of commodities compared with the great number of stocks handled in the Stock Exchange makes the organization of trading somewhat simpler. In place of the posts which designate the spots for trading in the different securities in the stock exchange, we find

on the floor of the Chicago Board of Trade three pits: one for wheat, one for corn and oats, and one for provisions. Trades are made by oral bids and offers, and confirmations are exchanged at the close of the day's business. The wheat contract calls for the delivery of Number Two red winter wheat at the seller's option on any date in the month specified. Various other grades are deliverable at the seller's option at premiums or discounts. As these differentials are fixed in the rules and are changed quite infrequently, one would expect that they would frequently get out of line with the actual differences in the market values of the various grades. No serious dissatisfaction appears to exist with the working of this rule, however. May, July, September, and December are the only deliveries for which any considerable number of contracts are sold.

Members carry accounts either as principals or as agents for outside traders. After a trade has been made, the seller and the buyer are both required to post 10 per cent of the amount of the transaction with one of certain designated banks, as security for the fulfilment of the contract. In case the price of wheat changes materially before the delivery date, the deposit must be adjusted. If, for instance, the market price of a certain contract advances five cents per bushel, all members who have that contract bought from others may withdraw five cents of their posted margins, and may demand that the sellers post additional margin to that amount. The practice in regard to calling for these margins depends upon the confidence which the traders have in one another's responsibility. These margins posted by the members with banks must not be confused with the margins which the broker requires from his customer, when dealing as an agent for an outside party. The broker is entitled to call a margin from his customer regardless of whether he is himself required to post a margin or not. There is no rule regarding the size of the margin which may be required from customers. The actual practice varies with the activity of the market, the amount of confidence the broker has in his customer's financial responsibility, the value of the account to the broker, and the readiness with which the customer can be reached in an emergency in order to call on him for additional security.

The fulfilment of all contracts is made by the delivery of warehouse receipts for grain stored in "regular" warehouses, that is, warehouses which have been authorized by the directors of the exchange to handle grain for delivery on contracts. In practice, a

great majority of the trades do not involve an actual delivery of grain directly between the parties, although any buyer or seller can obtain delivery if he desires. This is true not because the contracts are fictitious, but because in most cases the grain is resold before it is delivered to the original purchaser. The methods employed in handling these transactions have been the subject of a considerable amount of uninformed criticism, and an understanding of them is fundamental to an understanding of the whole system of future trading; hence, they will be described in more detail than would otherwise be necessary.

Suppose that A, a speculator, sells to B, in June, 5,000 bushels of "September wheat" at $1.10 a bushel. The next day B sells the same amount at $1.11 to C. None of the parties to the transaction makes any further trade in this contract before September. It is clear that when delivery time arrives the situation will be the same as if A had sold direct to C, except that A is entitled to only $1.10 per bushel when he makes delivery, while C is under contract to pay $1.11, the difference constituting B's profit. If, therefore, A makes delivery to C and the prices are adjusted so that each pays and receives what he would have gotten if trading had been settled by separate deliveries, the result is the same as though separate deliveries and payments had been effected, and a great saving in labor results both for the traders and for the banks. The courts have uniformly held therefore that devices by which A is substituted for B in the contract with C are legal, so long as delivery is actually contemplated at the time the contract is entered into. For facilitating the adjustment of accounts which wholly or partially offset one another, a clearing house is operated by the management of the Board of Trade. This clearing house has nothing to do with the offsetting of the accounts, but only provides facilities for settling the balances of payment due from one member to another. The following methods are used in working out the settlement:[1]

1. *Direct settlement.*—This kind of settlement occurs when each of two houses has sold the same contract to the other. Suppose that member A has sold to member B 50,000 bushels of September wheat during the course of a day's trading, while B has sold to A 60,000 bushels of the same option. It is clear that when September arrives the trades can be settled by the delivery of 10,000 bushels by B to A;

[1] This account is based chiefly on the *Report of the Federal Trade Commission on the Grain Trade*, Vol. V, chap. v.

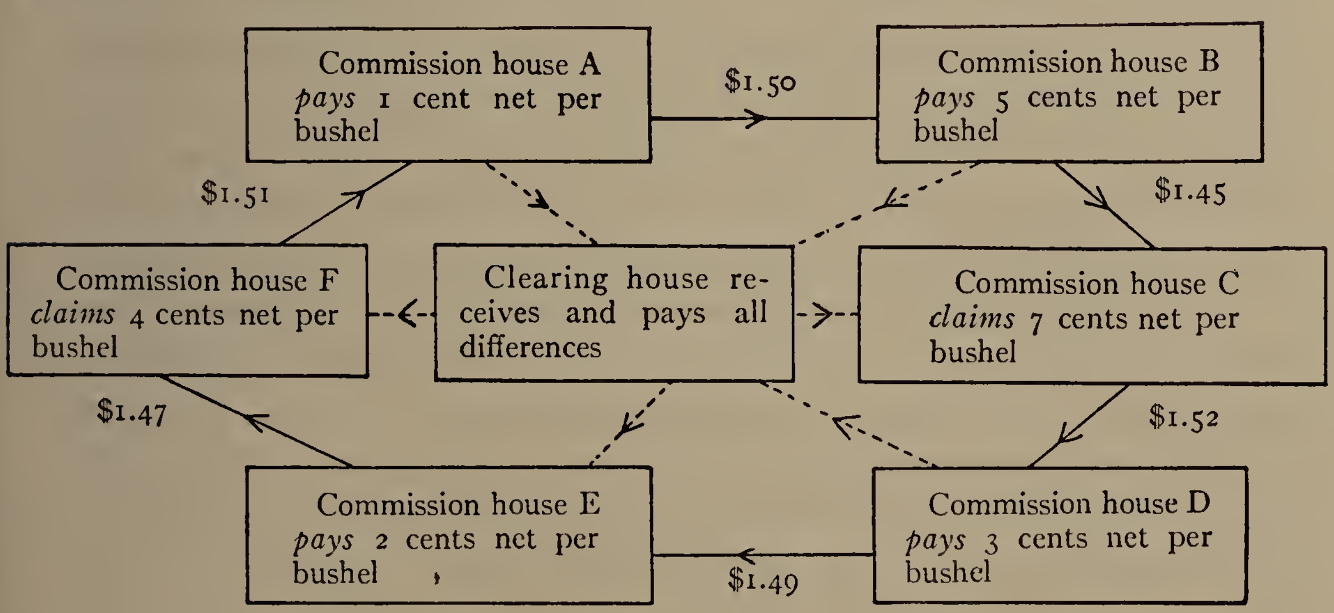
hence the remaining account may as well be offset at once, leaving on the books only the obligation to deliver and accept the 10,000 bushels. In this case B is said to be "short" to A 10,000 bushels; A to be long from B the same amount. On the next day, A's sales to B may be the larger, so that the balance will be wiped out.

If all the trades were made at the same price no further adjustment would be necessary, but since prices are constantly changing the trades offset do not involve an exact offset in the cash payments due; the balances due on account of offsets are therefore settled in cash. In making these settlements, the clearing house is utilized to effect an offset of payments due between the members. The methods used are the same in principle as those used in bank clearing houses and in the stock clearing house described in chapter viii.

2. *Ring settlement.*—A ring is formed when three or more members have trades which mutually offset. If A has sold to B, B to C, and C to A, and the facts are known, the trades can be canceled and the differences paid quite as readily as when there are only two parties to the offset. The following diagram illustrates the operation of the ring system:[1]

ILLUSTRATION OF THE RING SETTLEMENT AT CHICAGO

(A is assumed to have bought from F at \$1.51; F from E at \$1.47; E from D at \$1.49; D from C at \$1.52; C from B at \$1.45; B from A at \$1.50.)



3. *Transfer.*—The making of rings is entirely voluntary, and not all houses co-operate in the somewhat laborious task of comparing books in order to locate the rings. Trades which will not "ring out," either

[1] From the *Report of the Federal Trade Commission on the Grain Trade*, V, 223.

because of refusal of members to participate or because the chain ends with a house which is accumulating or distributing a large "line," may be disposed of by an arrangement by which the house to whom a particular contract was sold substitutes on its books the name of a house from which the same quantity was bought by the house which is seeking the transfer, and similarly the house from which it was bought substitutes the name of the one to which the transferring house has sold. Thus if in the case illustrated above the ring broke, say because F had sold to G instead of to A and no connection from G to A could be traced, any one of the houses except A and G could be released from its responsibility by transfer. For example, B might effect an arrangement by which A would be substituted for B on C's books and, of course, C on A's books.

The principal advantage of these systems of reducing the number of open contracts is the immense saving in margins which results. So long as contracts remain open each party has the right to protection against market fluctuations to the extent of 10 per cent, so that if there were no method of offsetting the trades the amount so tied up during the course of a season would grow very burdensome to the finances of the commission house.

At most grain exchanges[1] a more complete system of clearing is in use, whereby the necessity of forming rings and effecting transfers is eliminated, and each house is responsible only to protect the net balance of its open long or short account in each contract. By this method each house reports all trades daily to the clearing house, which is a distinct corporation, and then substitutes the clearing house on its books for the house with which the trade was made. Thus each house is "long" or "short" with the clearing house by the net amount by which its purchases exceed its sales of the given contract, or vice versa, while the clearing house itself is "long" with some houses exactly the amount it is "short" to others. Small margins are posted by members with the clearing house, and all losses or gains from fluctuations in price of the open contracts are settled daily. Thus if A has sold 5,000 bushels of May wheat to B and B has sold the same amount to C the clearing house will be "short" to C and "long" from A. If during the life of the option the market price advances two cents, A must pay the clearing house two cents a bushel, or $100, and C is entitled to withdraw that amount. By this system

[1] The system here described is frequently referred to as the Minneapolis system.

the members are saved a vast amount of labor which is necessary under the Chicago system, and the amount of capital tied up in margins is greatly reduced.

It must be emphasized that all these provisions have to do with the relations of members of the exchange with one another. The customer for whose account a trade is executed has nothing to do with the clearing, ringing out, or other process by which one trade open on the broker's books is offset against another. Many brokers notify the customer of the name of the member with whom his trade was executed, but this does not put the customer into any direct relationship with the other house in question. When a customer has made a trade for future delivery of grain, the house through whom he has made it is responsible to him to secure delivery or acceptance as the case may be. If before delivery month he makes an offsetting trade in the same contract through the same broker his responsibility is ended; the broker must secure delivery from the member from whom he has bought and make delivery to the one to whom he has sold. The customer is allowed to withdraw his profits, and required to pay his losses, at the time he makes his closing trade, although the actual delivery and payment on the contract may not be made by the substituted parties for many months.

This description of the methods used in disposing of contracts should make it clear that immense quantities of grain can be bought and sold through the exchanges with a very small amount of clerical and administrative labor and with very little actual transfer of possession. The process by which the total volume of sales can be made thus to exceed by many times the amount of grain actually in existence is exactly parallel to the process by which the volume of cash payments in a given city may in a single day exceed the amount of cash held by the banks and their customers. The cash payments so largely offset one another that only a small percentage of checks involve a transfer of cash from one bank to another. In exactly the same way, the system of offset and clearing enables the trade in grain to exceed the amount of grain actually held for delivery. In both cases, the soundness of the system depends on any individual's being able to get delivery on demand; so long as this can be done a trade in grain is no more fictitious because the parties to the trade do not handle the wheat than the payment of a debt by check is fictitious because the payee does not have the actual cash transferred from the bank on which the check is drawn to the one in which he deposited it.

The methods employed in other commodity futures markets are in general very similar to those which have been described in connection with the Chicago Board of Trade. The most important of the smaller grain exchanges are those of Kansas City and Minneapolis There are no records of amounts of grain sold but the Federal Trade Commission has prepared estimates based on the volume of clearings. For 1916, the most active of recent trading years, the estimates are as follows: Chicago, 23.8 billion bushels; Minneapolis, 1.3 billion; Kansas City, 1 billion.

The only other commodity exchange which is of sufficient importance to warrant attention in a general survey of the speculative markets is the New York Cotton Exchange. The methods of operating through this market are not materially different from those employed in the grain exchanges. The unit of trading is 100 bales of middling cotton (each bale weighing approximately 500 pounds). As in the grain markets, the contract is a basis contract, the seller having the option of delivering grades above or below middling at a premium or discount. The system of fixed differences has never worked as satisfactorily in the cotton market as it has in grain markets, apparently because the differences in grade are of more importance in determining the commercial value of the commodity, and because varying weather conditions give rise to very wide differences in the proportion of different grades produced in different years. Prior to the passage of the United States Cotton Futures Act, the discounts and premiums were fixed by a committee; at present they are fixed by the Secretary of Agriculture on the basis of the premiums and discounts actually prevailing in a large number of selected markets for cash cotton.

Let us now turn our attention from the technical organization and procedure of the exchange to the speculator's methods of seeking profit through them. Except in the sensitiveness of the market to minor influences making for change, the ease and rapidity with which trades can be effected, and the small amount of capital needed to control comparatively large units of the commodity traded in, speculation in grain or cotton through the futures markets, differs little from speculation in commodities which are bought and sold by the ordinary channels of trade. In all forms of speculation the only way in which the operator can reasonably expect to secure a profit is through some sort of differential advantage over the market as a whole, an advantage which may arise either from special training,

unusual ability to judge the trend of the market, or from access to special sources of information not available to the general public. Few persons, without special knowledge of the businesses in which the commodities are used, suppose that they can, as a long run result, make profits by speculating in such commodities as lumber, iron, wool, or silk, though these commodities have active markets in which there are unlimited opportunities for profit for those who are able to forecast them. But thousands of people who would never consider the advisability of buying a few thousand dollars worth of any of these staples, chiefly on credit, and holding them for a rise, do habitually or occasionally match their skill against the market for speculative grains and cotton.

The reason for this disposition is not to be found in any greater facility for forecasting the trend of the market in the case of the organized than in the unorganized markets. The most important difference is this, that in an organized futures market the commodity and the methods of buying and selling it are so standardized that it is *possible* for an individual to buy and sell without taking the trouble to learn the technique of judging qualities, the methods of handling and storing, the trade customs, and other details which are necessary for buying and selling through the unorganized markets. Add to this the facts that the amount of capital required is very small, and that the markets are so sensitive that profits or losses can be realized very quickly, and it is easy to see why organized markets attract a following of speculators who are affiliated with the trade in the commodity in no other way. The cotton market has always been particularly popular for this purpose in eastern and southern circles and the wheat market in the Middle West, though the violence of fluctuation of prices during the war and the closing of the wheat pit during the period of federal control caused a transfer of interest to the corn market, and the wheat market has not fully recovered its following.

What then are the methods employed by speculators in these markets, and what is the probability of success in using those methods? In the first place, it is certain that the ease with which trades can be executed in the organized markets does not of itself imply that it is any easier to form an intelligent judgment of the probable course of prices there than in any other markets. The market price, whatever it is, represents the balance of judgment of the trade, both speculative and non-speculative, as to the figure at which demand and supply will, during the next year or year and a half, be approximately equal.

Analysis of the conditions of demand and supply is a special problem for each commodity, and is the same kind of problem in an organized market that it is in an unorganized market. As in all other kinds of speculation the average result for the whole group of speculators is always a loss, for the commissions and other expenses are running against the public just as the percentage in favor of the house runs against the public in a gambling hell; the minority who succeed do so because their information or their judgment is better than that of the market as a whole. The first question which the prospective speculator should ask himself, therefore, is, what advantage have I over the average man who trades in this market? If he has no definite advantage, the probability is that his chances are below average, for he is trading in a market where there are many men with life-long training in studying market conditions and with access to the resources of large organizations for compiling crop reports and trade reports which enable them to anticipate to some extent the reports on which the outside speculator, the average man, must rely.

This advantage of the professional must not be exaggerated, however. The saving feature of the situation, from the standpoint of the average speculator, is that his colossal ignorance of the factors which he needs to understand in order to forecast the trend of the prices is shared to a large extent by those who are not outsiders. For though it is clear that the judgment of a man of average intelligence who knows nothing of the grain trade is not likely to be of much value in forecasting the course of grain prices, the converse is not true. A man may be an excellent judge of the qualities of grain or cotton, or be expert in transportation, in storage, in bargaining with country sellers, or in a dozen other ways in which technical proficiency appears among those who make their living in the trade, and yet he may have no opinion worth quoting in regard to the probable future trend of prices. The market is too big to be judged on the basis of the facts which come to the attention of any man in the course of his daily routine unless his work involves constant study of the larger factors which determine the price outlook. And there are large "unknowns" for the most careful forecaster. In most years by far the most important factor in making and breaking prices in the grain and cotton markets is the crop outlook. Conditions of demand are relatively stable, though there is more elasticity in the demand for these so-called necessities than is generally supposed.[1]

[1] For evidence of this, cf. statistics of consumption in *Report of the Joint Commission of Agricultural Inquiry*, Part I, chap. viii.

Conditions of supply are extremely unstable, on the other hand, so that the speculative public necessarily takes demand more or less for granted and concentrates its attention on supply. This does not mean that changes in the conditions affecting demand are less influential than supply conditions in determining the price at which the year's supply will move into consumption; it simply means that supply conditions are discounted in the price long before they actually materialize, while demand conditions are reflected in prices rather at the time they actually occur. For a large part of the year, moreover, the most important element in the supply problem, the future course of weather conditions, is known to no man. The same thing is true, as a rule, of the amount of acreage which will be planted to the next year's crop and of many of the factors of demand. Another large part of the necessary data for judgment consists of the statistics of visible supply, grain in farmers' hands, crop conditions, etc., which are collected by government bureaus or by private crop reporting and statistical agencies, and are available to the general public. This is the great argument in favor of speculation in the grain and cotton markets for the average man as contrasted with the stock market. No one has "inside information" concerning the weather conditions next month or the crop conditions of last year. The factors which are known to all and the factors which are known to no one are so important that the factors which are known to only a few constitute a less crushing handicap against the outsider and give him something nearer an even chance to save his money than he has in the stock market. But the odds are against him in either place.

The methods of studying the factors making for advance or decline of prices in a commodity market admit of no such precise analysis as was attempted in our discussion of the technique of investment and speculative operations in the security markets. To a large extent, each successive price situation presents a new problem. In general, the factors that are known are very quickly discounted in the price, but the facts essential to a complete solution are so imperfectly known that there is a wide margin of variation between the futures price for any distant month and the prices actually realized when that month arrives. In other words, the trade keeps itself well informed on the situation, at least the supply side of the situation, at any given time, but the situation is so frequently changed by the appearance of new and unpredictable conditions that futures prices only imperfectly forecast the prices that will be charged in the future.

The margin of error in the calculations of the market, as a whole, being so large, it is not strange that it is wide in the calculations of any individual operator.

Besides the general common-sense method of studying the whole situation by the use of current statistics and the history of markets in the past, a number of special methods which seek to isolate single factors and predict relatively temporary price conditions on the basis of these conditions, may be mentioned.

Calendar-trading is probably more prevalent than it is in the stock market,[1] and seems rather less irrational in grain or cotton than in stocks. No careful study of seasonal tendencies in the futures markets seems to have been made, however.[2]

Weather map-reading is an effort to forecast each day's market by study of the daily report furnished by the Weather Bureau, which shows the weather conditions for all parts of the country up to 7:00 A.M. of each day, before the opening of that day's market. The underlying theory of the map-reader is that a change in weather which will directly affect the crop prospects in any section is likely to be reflected immediately in buying or selling orders from that section, which may be discounted by prompt action based on the weather report itself. The author has no data from which a conclusion can be drawn concerning the degree of success attainable by this method of operation; it seems quite possible that so long as the number of map-readers is small the method may give satisfactory results. A general adoption of the method of study would change the problem to that of making a forecast on the part of each map-reader of what the other map-readers are likely to do.

Pit-scalping is trading on the floor of the exchange for small fluctuations, largely those anticipated on account of situations arising on the floor itself; it is very similar to the type of trading referred to in connection with the stock market.

Tailing on is trading on gossip, tips, or direct information concerning the market position of leaders in the trade. This is apparently the least promising method of all, but it has a remarkable number of adherents, if one may judge from the amount of attention given in the market gossip to the doings of prominent traders.

[1] See p. 164.

[2] Tentative studies made under the author's direction indicate that there are probably some seasonal tendencies in futures prices, though they are not at all comparable in scope or regularity to those in the cash grain markets.

Spreading is one of the most highly specialized types of speculation. This consists in selling one contract and buying another, so that the profit or loss will consist in a change in the spread between the two prices. For example, a trader may buy December wheat in Kansas City and sell the same amount of December wheat through the same commission house in Chicago. The two trades do not cancel one another; each must be closed out later by a separate transaction. But a market change, due to most causes, will affect one as much as it will the other, and will afford neither a profit nor a loss. The spreader speculates only on the factors which will affect one price more than the other, such as an interruption of traffic on account of a car shortage, or crop damage in the north occurring after the southern wheat has passed its critical point. The range of possible variation in the spread is smaller than in the prices taken separately; hence the commission house can safely require much smaller margins than would be required on either trade alone. For this reason the trader can operate in large units, thereby securing a compensation for the narrowing of the possible profit per bushel.

In like manner, one may buy December and sell May futures in the same market, the speculation in this case involving the premium or discount on the one contract compared with the other. Or, one commodity may be "spread" against another commodity, as when corn futures are bought and oats futures sold at the same time. Most price changes in the corn market are accompanied by similar, though less extensive, movements in the oats market; if a trader foresees a rise in corn prices which will not affect oats, he buys the corn and protects himself by the short sale of oats against changes due to general conditions affecting both. Or the spreader may be simply a calendar-trader, who has noticed that the spread has moved in the same direction at the same period in several successive years.[1]

Since commissions on spreading trades are double those on single trades while the probable profit per bushel in the event of a successful forecast is much smaller, the commission charges are a heavy handicap against the spreader. For this reason such transactions are chiefly those of exchange members, who either execute their own trades or pay reduced commissions.

Unorganized speculation is in large part a subsidiary feature of other forms of business enterprise. A speculative element is present

[1] In the cotton market, spreads between different markets are referred to as straddles; in the grain trade, the latter term is frequently applied to trades in which one month's contract is bought and another month sold short against it.

in all lines of business where goods must be held for resale, unless the risk can be eliminated by hedging or by "contracting out." Hedging will be discussed in chapter xii; contracting out was discussed in chapter iv. In connection with the latter discussion, attention was called (p. 61) to the possibility of keeping price risk at a minimum by carrying small inventories and balancing advance sales against purchases.

Business men who believe themselves able to prognosticate price changes frequently pursue the opposite course to that just indicated, increasing inventories when they believe prices are about to advance and cutting them down in anticipation of falling prices. To whatever extent this policy is practiced, the business assumes the character of a speculation on price changes, and all that has been said concerning the difficulty of profiting consistently through any sort of speculation applies to it in full. Wherever success depends on skill in forecasting the course of a market it resolves itself into a problem of being more skilful or more fortunate than the group whose composite judgment makes the level of prices what it is, and speculation in inventory, except that it is not so rapid, is quite as risky as speculation in futures.

Of the specific types of unorganized speculation, only one need be given special attention—the trade in land. For many generations this has been the favorite American speculation, and its risks are still generally supposed to be less than is the case with any other form of speculative enterprise. As with other lines of unorganized speculation, land speculation is largely a side issue to other lines of business, in this case chiefly agriculture and building, though there is also a considerable volume of speculative buying and selling by individuals who have no business need to become land-owners.

As compared with the organized markets described above, land speculation presents the following peculiarities:

1. *There is no "short side."* In any epoch of land speculation, the bulls, therefore, have full control so long as their enthusiasm and capital suffice to support and advance the market. Those who believe land is going higher, buy; those who believe it is going lower, except as they happen to be owners of land which they can sell out, have no influence on the situation. Hence, in land booms, prices rise more sharply than is likely to be the case in almost any other form of speculation. On the other hand, when prices once turn downward there

are no "shorts" who must come into the market as buyers sooner or later, and the lack of this kind of buying makes the collapse more complete and sudden than is likely to be the case after the completion of a boom in an organized market.

2. *The turnover is relatively slow.* Whereas the grain speculator can enter into a trade, or close it out, on a minute's notice, real estate often must be held a long time till a buyer appears.

3. *Prices are relatively steady.* Except in occasional booms, there are few fluctuations, and prices generally show an upward trend from year to year. The apparent steadiness, however, is less significant than it appears, as it is largely due to the slowness of turnover previously referred to. Speculative buyers of real estate expect to have to hold their properties a considerable length of time; hence are not apt to be caught in positions where they must sell quickly at any price. Nominal prices remain steady at times when few or no sales are occurring, and when a real market could be established only by drastic reductions in prices.

4. *Real estate speculation requires proportionately more capital than does organized speculation.* Whereas stocks and futures can be bought and sold on margins of 10 per cent or less, the buyer of real estate must usually be prepared to advance at least one-third the purchase price. Hence proportionate changes in price mean proportionately smaller profits and losses. This factor, together with those referred to in the two preceding paragraphs (slow turnover and steady prices), accounts for the somewhat smaller proportion of speedy failures among those who dabble in real estate speculation as compared with stock speculation or the trade in grain futures.

5. *Individual judgment of qualities of land and individual skill in bargaining play a large part in determining success.* In an organized market, anyone may know at a glance at what price his commodity is selling and may confidently expect to buy or sell at practically the same price as anyone else would. In the land market, no two units are alike; trades are infrequent; the prices actually paid are often not made public. Hence there is an opportunity for a good judge of values to profit by trading with poorer judges, quite apart from changes in the level of prices of other land in the same vicinity. For the same reason the element of skill in "dickering" often makes the difference between a profit and a loss.

6. *Profits are very generally overestimated.* When land is used for agricultural purposes by the owner during the life of his speculation,

or is rented, a nominal profit on resale often represents a real loss if account is taken of the fact that the property has failed to yield a fair return on the original investment during the time it was held. Agricultural land in the eastern corn belt before the war generally returned less than 3 per cent on its sale value, if rented, or if worked by the owner with proper allowance for the value of his own time. In most localities this situation was not greatly changed by the war boom, as land prices and rents and prices of farm products all advanced, leaving the net return on the sale price more irregular than before, but probably on the average still less than 3 per cent. In such cases the excess of the selling price over the figure on which a fair return can be earned represents a capitalization of anticipated future returns, either in increased direct yield or in the price secured on resale. In many cases apparently high prices paid for land have in fact been justified by the appearance of the anticipated increases, yet the profit on resale has no more than compensated for the loss of interest during the years the property was held.

In the case of urban land held vacant for resale, the point just made is still more pertinent. Apart from considerations of taxation, unused land must double in value every twelve years to yield on resale a return of 6 per cent on the investment. Urban lands held out of use for speculative purposes apparently do not, on the average, increase in value at as great a rate as that, and 6 per cent is certainly a low return for a speculative transaction. Some individual pieces of land improve much more rapidly, and many fail to gain for years at a time. In other words, the "unearned increment" is not something which accrues automatically as a result of investment in land, but is like any other speculative gain, a differential. Such a differential gain may be obtained by superior shrewdness in forecasting the lines along which a city will develop, by "inside information" concerning the plans of municipal governments, corporations, and individuals, or by sheer good luck. Its existence in any case, however, is always a result of uncertainty, for just as in every other case where future income is capitalized, as soon as an increase in the value at a known future date becomes certain it is immediately reflected in the present price, and the income no longer represents more than pure interest on the selling price.[1]

[1] The social interest in the activities of the land speculator is discussed below, chap. xviii.

CHAPTER XII

HEDGING

Among the institutions which have been developed to aid the business man in avoiding the risks incident to our roundabout time-consuming methods of production and distribution, one of the most interesting is the system of shifting the risks of price changes, which is made possible through the use of the futures markets for "hedging" purposes. A hedging transaction may be defined as a coincident purchase and sale in two markets, which are expected to behave in such a way that any loss realized in one may be offset by an equivalent gain in the other.

As applied in the grain and cotton futures market, the term "hedging" refers to one of two types of transactions. The first, the hedging sale, arises when a country grain dealer, a terminal buyer, a miller, or an exporter buys grain in the cash market and sells futures contracts of an equivalent amount, as protection against a fall in price during the time that the grain is in his possession. The second, the hedge purchase, arises when a manufacturer has sold his product ahead at a fixed price and buys futures to protect himself against an advance in the price of raw material. The idea is that if the price of cash grain declines a similar decline will probably occur in the futures market, and the loss realized on the one transaction will be offset by a gain realized on the other. It goes without saying that such a protection cannot be obtained without giving up the chances of a profit from a price fluctuation in the opposite direction. Since the hedging transaction involves some costs for commissions, taxes, interest on margins, etc., it is clear that the average result of a long series of such trades should normally be a slight loss, but this loss is regarded as a premium paid for insurance against the risk of such heavy losses in an unfavorable season, as would disrupt the business and prevent its continuance through the long run, in which gains and losses from price changes could be expected to balance.

The question may arise, why any individual would engage in transactions of such a character that the chances of loss and the chances of gain offset one another. The answer is that in changing grain from country points to terminal markets, in milling, in jobbing flour, and in other operations incident to the production and distribution of

grain production, the trade or manufacturing profit can be expected under ordinary conditions of competition without reference to any gain or loss from price changes. The hedge enables the operator to make his price and regulate his business on the basis of his ordinary trade profit, without the possibilities of speculative loss or gain which arises from the instability of prices. It is impossible to carry on such operations as these without owning grain or its products through a certain period of time, but the hedge enables the operator to isolate the ordinary risks of competition from the special risks, which arise from the instability of prices of the commodities in which he is dealing.

Several advantages result from such a separation. For one thing, the amount of credit which the grain or other operator can secure is much greater. This is true because the protection afforded a bank by the use of warehouse receipts for grain as collateral is much stronger, in case the owner is protected against loss by hedging contracts. The principle is the same as that involved in the custom by which the mortgagors are required to keep property insured for the benefit of mortgagees. In the second place, the use of the hedging contract makes it possible to do business on a much smaller margin of profit. Where hedging contracts are not available, commodities must be handled on a wide enough margin to compensate for the risk of adverse price changes. When the protection of the hedging contract is available, competition ordinarily brings about a narrowing of the profit margin in accordance with the reduced amount of risk. This is of no financial advantage to the grain dealers as a class, but makes it possible for consumers to receive the benefit of lowered prices, or grain producers to receive the benefit of higher prices, or for both these things to take place, and it also makes the grain dealers' business less speculative.

It is clear that the gains from the practice of hedging are entirely due to the reduction of uncertainty, and not to any reduction in the probability of the unfavorable contingency against which protection is sought. Whenever a man saves himself from loss by hedging through the futures market, someone has to lose to keep him even. The question therefore arises whether the total amount saved by hedgers as a group on transactions, where they would otherwise incur loss, is greater or smaller than the profits they lose in cases where the market moves in their favor. The theory generally accepted among economists is that the speculators who buy and sell hedges to grain dealers, millers, and other tradesmen are specialists in the art of discounting

the future, more expert than those with whom they are dealing, and that hedgers as a class, therefore, lose something in the long run to the speculators as a class. This loss constitutes the compensation of the speculators for the service of reducing trade risk, and from the standpoint of the grain trader, should be figured like his commissions, as a premium paid for insurance against risks too great to be borne.

No statistics bearing on this question are available, but it does not seem probable that, as a matter of fact, speculators are more expert than the dealers with whom they trade. Grain dealers, millers, and others who habitually hedge probably stay in business much longer on the average than do speculators, and, therefore, accumulate more experience. The speculative group includes a certain number of professional large-scale operators who do succeed in staying in business year after year, and presumably are making satisfactory profits, but these are the survivors of a large number whose financial strength is exhausted, or whose taste for speculation is satisfied before they attain the dignity of professionals. A few speculators make very large profits, but in all probability the business of furnishing hedging contracts belongs in the list of services which, as a whole, are rendered for society without compensation.[1] Another point which is frequently overlooked in the discussing of hedging is the question to what extent hedging contracts and practice furnish protection against price changes. The following selection summarizes the situation in this regard:

It has been the common custom in works dealing with market risks and their elimination to mention hedging contracts as one of the most effective social devices for reducing and transferring risk. There is in these discussions usually the implication, if not the definite statement, that hedging contracts, wherever they can be used at all, can be expected to give a complete protection to the user against the risk of adverse price changes.[2] Such conclusions concerning hedging transactions, as they are carried on in the ordinary course of business through the futures markets, are not at all justified. They arise from an inadequate comprehension of the nature of a hedging

[1] See above p. 38.

[2] For example: "Whatever it (the milling company which sells hedges) gains or loses on the original purchase of cash wheat will be exactly offset by an equal loss or gain on the future sale." F. M. Taylor, *Principles of Economics*, p. 294. "A person who is neither long nor short is running no risk; he is hedged." J. E. Boyle, *Speculation and the Chicago Board of Trade*, p. 34. "If wheat prices have risen he loses on his wheat 'deal' but this loss is offset by the corresponding rise in flour." Marshall and Lyon, *Our Economic Organization*, p. 382.

contract or from an incomplete understanding of the relations of the two markets which are essential to the hedging process.

To see clearly the possibilities and limitations of hedging contracts on organized produce markets it is necessary to understand first what a hedging contract is. The essence of a hedging contract is a coincident purchase and sale in two markets which are expected to behave in such a way that any loss realized in one will be offset by an equivalent gain in the other. If such behavior follows a perfect hedge has been effected. The commonest type of hedging transaction is the purchase and sale of the same amount of the same commodity in the spot and in the futures markets. Frequently, however, the trades are in different commodities, as when cottonseed oil is hedged in the lard market or flour in the wheat market.[1]

The spot and the futures markets are separate markets. The futures market is highly centralized and highly competitive. All futures transactions are made in a dozen exchanges, where buying and selling orders converge from all over the world. The "spot market," on the other hand, if it can be spoken of as a market at all, is highly decentralized, frequently only partially competitive, and much less responsive to minor forces making for change. Spot trades which it is desirable to hedge take place in Gopher Prairie as well as on the floor of the Minneapolis Chamber of Commerce. The exporter in Baltimore and the miller in Painted Post may be as anxious to hedge purchases or sales as is the terminal elevator operator who buys on the floor of the Chicago Board of Trade. In speaking of the spot market we may be talking about the market in any one of many places. Whereas an almost perfect system of communication has made the futures markets practically a unit, the separate spot markets are at best only partially merged into one.

Any divergence from the anticipated relationship of the prices in the two markets results in an imperfect hedge. The possibility of imperfection in the protection offered by hedging trades has been recognized by some few writers, but through all the literature of marketing there runs the assumption that such variations as make the protection

[1] The distinction drawn here is somewhat artificial, as it rarely happens that the commodities bought and sold in the spot and futures markets respectively are actually identical. Only specific "contract grades" are sold through the futures market, and these are not likely to be the exact equivalent of the spot purchases which are being hedged. The imperfect character of the protection offered by hedging sales in the case of "off grades" is indicated in J. E. Boyle, *op. cit.*, pp 171–75.

inadequate are much more abnormal and infrequent than is actually the case.[1]

THE ASSUMPTION OF A NORMAL SPREAD

The failure to appreciate the varying relationship between spot and future prices and the resulting erroneous notions concerning hedging have centered about the idea of a "normal spread," that is, a relationship between spot and future prices which is believed to show itself with a high degree of regularity. It is obvious that if any definite spread between the spot and the futures price does appear with great frequency and permanence the hedger is relatively safe in assuming that the two prices will fluctuate in unison, and may place his hedge with the expectation of correspondingly complete protection from adverse changes in price. The normal spread has been assumed, however, without a careful analysis of the assumptions that would be necessary to make it a useful concept. A presentation of the assumptions which are necessary to give meaning to the idea will show the fallacy of the notion of complete insurance against price changes and at the same time furnish a background against which the actual happenings and the resultant possibilities of avoiding market risk by hedging may be shown more clearly.

Coincident fluctuations in any two markets can be expected only under one of two sets of circumstances. In the first place, the two markets might conceivably remain in line with one another because both were controlled by the same forces, or second, prices in one market might exercise a controlling influence over prices in the other. In practice neither of these things ever happens completely in connection with the spot and futures markets of the produce trades. To show what does happen, it is necessary first to consider the hypothetical conditions under which a perfect hedge could be effected; second, to analyze the ways in which the actual marketing situation diverges

[1] For example: "There is every reason to believe that if the price of cash wheat rises 10 cents a bushel the September option will also have a rise of 10 cents, or approximately that amount." S. S. Huebner, "The Functions of Produce Exchanges," *Annals of the American Academy of Political and Social Science*, XXXVIII (1911), 343. Fred M. Clark (*Principles of Marketing*, pp. 370–72) recognizes the possibility of a situation in which futures contracts do not offer a complete hedge, but seems to regard this situation as highly exceptional. L. D H. Weld (*Marketing of Farm Products*, p. 345) refers to the failure of hedges to offer complete protection on account of the tendency of futures and cash prices to draw together as delivery day approaches. When futures contracts are selling above cash grain this is a source of *gain* to sellers of hedges against grain in storage or in process of manufacture. For its effect on buyers of hedges against forward sales of flour, cf. below, p. 256.

from these hypothetical conditions; and third, to survey the statistical evidence concerning the frequency of occurrence of the conditions under which a perfect hedge can be secured. The wheat trade furnishes a convenient case for both the assumed and the actual illustrations.

A SUPPOSITITIOUS SITUATION

Let us begin our discussion by considering a highly artificial and simplified situation in which there would be a definite normal relationship between the prices of wheat for immediate delivery and for delivery at any specified future date. We shall assume:

1. That there is no carry over; that is, the last bushel of the old crop has gone out of the market at the end of the crop year, say on June 30.
2. That the entire new crop of the world has "come in" at one time, July 1, and is accessible. In practice this would doubtless have to mean that a very large portion of it had reached central markets where it could be retained as a visible supply, and there would have to be no doubt that the balance of it could be made available without delay when wanted for consumption.
3. That no additional wheat could possibly reach the market until July 1 of the following year.
4. That costs of storing grain do not change during the year.
5. That everyone who is interested in the wheat trade has full information concerning the available supply.
6. That everyone in the wheat trade has complete information concerning the fact that wheat is to be consumed uniformly throughout the year and at such a rate as exactly to exhaust the supply on June 30.
7. That everyone concerned can be counted on to act with pecuniary rationality.[1]

With these conditions existing, one might expect to find a definite and normal relation existing at any given time between the spot and the futures contract prices, and an absolute uniformity in the price of each futures contract throughout its life. The situation which would exist on July 1 is illustrated in Figure 1 as follows:

XA = price of cash wheat on July 1.

YC = price of June futures on July 1.

Successive ordinates of AC represent successive prices of cash wheat through the year.

[1] Most of these considerations would be included in the statement that the supply is known and that the effective demand is such that the total will be consumed during the year and at a uniform rate. It has seemed well, however, to put the situation in factual terms so far as possible.

AM, *AF*, *AH*, *AD* represent the carrying charges to September 30, December 31, May 31, and June 30.

XM, *XF*, *XH*, represent the prices of September, December, and May futures; these prices are constant.

Since, according to the assumptions, the supply is known, its availability certain, its total consumption fixed at a uniform rate, and all persons concerned are acting rationally, the price on July 1 of wheat deliverable the 30th of the following June would be higher by exactly the carrying charge between the two dates.[1] The price of cash wheat would increase uniformly from the beginning to the end of the year.

If at any time the "spread" between spot and future prices should exceed the amounts indicated there would be an immediate and certain profit for anyone who would buy cash grain, sell futures, put the grain in storage, and later deliver it on the contracts. Under these conditions no one could rationally sell any cash grain. If, on the other hand, the spread became less than the carrying charge it would be unprofitable for anyone to hold any grain, for it would be cheaper to sell one's holdings and replace them by purchasing futures and accepting delivery on them.

A MODIFICATION OF THE ASSUMPTIONS

We may now modify our assumptions and bring them closer to reality by introducing certain factors which may operate to disturb the price level. Suppose there occurs a general decrease in the desire to consume wheat, on account of the introduction of a popular substitute. Or, a more probable occurrence, suppose it is discovered during the year that the size of the crop has been underestimated. Retaining our hypotheses of complete information and of the necessity of getting rid of the entire crop by July 1, it is obvious that the price of wheat must immediately fall to a figure which will stimulate consumption sufficiently to move the entire crop into consumption by June 30. There is no reason to suppose that such a change would affect the premium on futures over spot prices. The triangle *ABC* in Figure 1 would move toward the line *XY*, decreasing both *XA* and *XD*, but *AD* would be unchanged. In like manner changes in the proportion of the crop desired for consumption early in the year, changes in costs of production, and many other factors which affect prices would have the same effect on both spots and futures. Even

[1] The important factors in the carrying charge are, of course, storage, interest, nsurance, and shrinkage.

the introduction of a carry over into the scheme would not alter the relationship of cash and future prices, so far as deliveries in the same crop year are concerned (though it would have a marked effect on the relation of cash prices in the spring and futures prices for new crop deliveries).

If, however, we assume that, on account of ignorance or economic irrationality or on account of physical difficulties in getting the crop to market, the holders of a large part of the supply fail to sell it during the first half of the year and then dump it on the market for consumption during the last half, the case is entirely different. The only

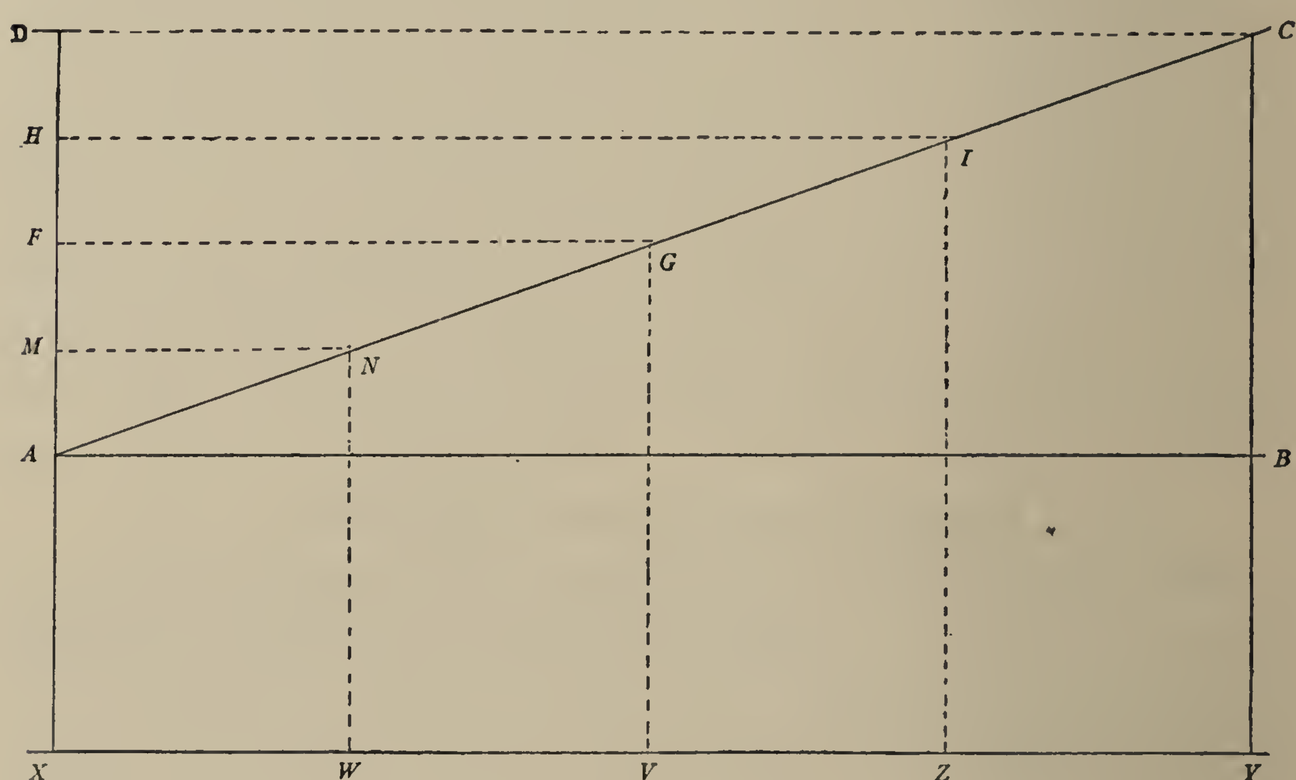


Fig. 1

possible result of this situation will be higher cash prices during the first half of the year than during the last half; if the buyers of forward contracts understand the situation futures prices for spring deliveries will correspond to the lower prices which will actually prevail at delivery dates.

The result is illustrated in Figure 2 as follows:

As before,

XA = cash price in July.

YC = cash price in following June.

XD = price of June futures in July.

The prices of intermediate futures will be such as to reflect the anticipated course of the cash grain market. AC will not necessarily be straight, and may be of any degree of irregularity, except that it

cannot drop below the level of *DC* by more than the carrying charges to June 30 from the time represented by the point of intersection.

Under such conditions the market would afford very imperfect facilities for hedging.

The premium *DA* on cash grain over futures contracts is sure to disappear. Hence the hedger, if he holds grain long, must expect to lose, either by an advance in the price of the futures contract which he is "short," or by a decline in the cash grain which he is "long" or by both. There is no inducement to hold grain longer than is necessary.[1]

Such a situation as this seems on the face of things to be highly abnormal, and the discussions which postulate the possibility of a

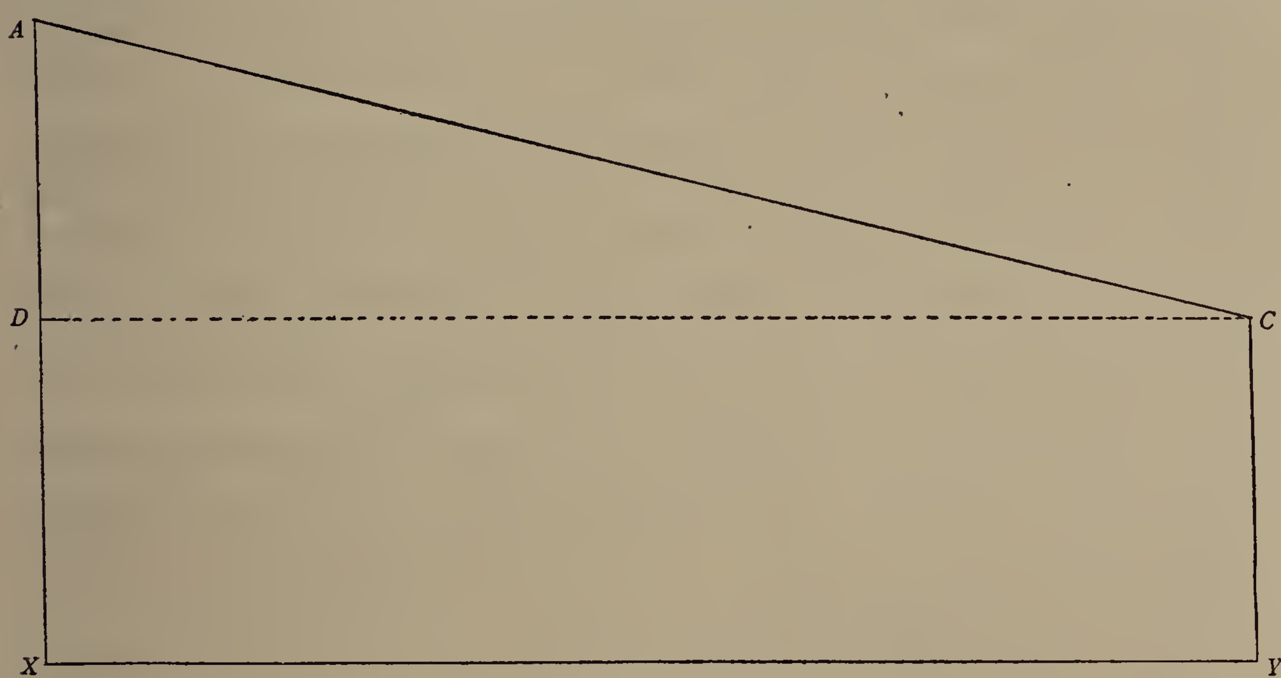


FIG. 2

complete hedge simply assume that the condition depicted in Figure 1 is "normal" and that in Figure 2 abnormal. Our next task, therefore, is to examine the extent to which the terms "normal" and "abnormal" have any real application to the varying spreads between spot and futures prices.

In the first place, it must be emphasized that the current assumptions concerning normal spreads do not apply to the relation between spot prices for old wheat near the end of the crop year and contract prices for new crop deliveries. Let us examine the factors which

[1] Of course if *DX* is large relatively to *DA* it may be profitable for those whose business requires them to own grain at such times to sell hedges against it. The hedge increases the probability of a small speculative loss, which must be covered by a trade profit, but protects against a large loss due to changes in other fundamental conditions which affect cash and futures prices alike.

determine the relative value in May or June of wheat for immediate and for future delivery. Consider first the influence of the amount of old wheat on hand. So far as the spot market is concerned, this constitutes the entire potential supply, and its relation to the demand for wheat for immediate consumption is the most important factor in determining prices. So far as the July or September prices are concerned, on the other hand, the supply of old wheat is of importance only as it affects estimates of the total which will be available for comsumption during the coming year, of which total the carry over of old wheat will constitute only a small fraction. More specifically, if in May or June the supply of old wheat is small relatively to the amount needed to keep mills in operation and supply current demands for flour till the new wheat is fit for grinding, the spot prices at terminal markets will have very little relation to the futures prices. On the other hand, if the supply of old wheat is large enough so that a considerable part is likely to be carried over to be sold along with the new wheat, the spot price will come under the control of the factors which determine the price of the futures and is colloquially said to be controlled by the futures. In other words, a shortage of old wheat may send the spot price to a level indefinitely higher than the price for futures, but an abundance of old wheat cannot send it lower than the futures price, except by the "carrying charge," because the surplus of old wheat constitutes a part of the prospective supply which determines the price of the futures.

Spot prices at different points which are not centers of consumption are affected differently by a shortage of old wheat near the end of the season. If there are supplies quite near the terminal markets, and the situation is not complicated by the presence of a local consumptive market, their price will be closely related to the spot prices at the terminals. If there are other supplies so remote that they cannot be gotten to the central market before new wheat is expected, their price fluctuations will correspond to those for the futures. In general, the longer the time required to make delivery at a central market or a point of consumption, the lower the spot price will be, provided the futures are selling below the cash grain.

The spread between spot and future prices is the most obvious instrument which society uses to control the carry over of grain from one crop year to another. If large offerings of old wheat or a prospective shortage of new results in a premium on future contracts large enough to cover the full cost of carrying, storage is encouraged; if a

shortage of old wheat or the prospect of a large new crop results in cash prices higher than futures, or even above the figure where the premium on the futures will cover carrying costs, holders are encouraged to market their holdings of old and replace them by purchases of futures. The social utility of an adjustment of prices which will effect a distribution of the old grain between the two crop years in accordance with the relations of present and prospective demand and supply conditions is obvious, and in general the system, though imperfect, seems fairly effective. The usual situation is a premium on cash over the futures.[1] If the market always behaved in a perfectly rational way a very small premium on spots over futures would suffice to insure that no grain would be carried forward beyond the amounts actually needed to supply demands for old grain before the new became fully equivalent in quality; for no one could afford to carry forward for sale in a future month a commodity which he could more economically buy for delivery in that month. Some grain is carried over, however, especially by farmers, in excess of what is needed, and in the face of a practical certainty of lower prices in the fall.[2]

The situation during the fall months is apparently simpler than that which exists before the harvest, and the expression "normal spread" has more meaning, but even here there is no uniformity in the spreads between cash and futures markets in different years. In the assumed setting given earlier we have seen how "a normal spread" might be made possible. But the marketing of grain is so irregular that there occurs surprisingly often a relative shortage of cash grain and surplus of prospective supply. Given a certain state of demand, the price of futures tends at this time of the year to be controlled by

[1] To test this point an examination was made of the prices, at Chicago, of cash contract wheat and July futures on the first trading day in May for the years 1901 to 1915 inclusive. Of the fifteen years there were twelve in which at the respective low prices of the day cash grain was above the July option at its low point and only one (1907) in which the premium on July futures over cash grain was as much as 2 cents. The figures for the low prices of the day represent the situation more accurately than those for the daily high prices, because the futures price always represents the bottom of the grade, while the cash quotation may represent any quality not quite good enough to be classed in the next higher grade. Accurate data as to carrying costs are not at hand, but figuring interest at 6 per cent on 90 cents a bushel and storage at 1914 rates the cost of these two items approximated 1.8 cents for the first month and 1.5 cents a month thereafter.

[2] An extreme case occurred in the late spring of 1915, when many farmers were holding grain for a rise, although September wheat was selling from 30 to 40 cents and July wheat from 15 to 25 cents below the cash quotations.

the reported size of the harvest, while the spot price depends upon the supply of grain actually available. Whenever, on account of bad roads, car shortage, railway strikes, farmers' holding movements, or for other reasons, the supply of grain actually coming into the central markets is smaller than current reports concerning the size of the harvest led the trade to expect, the spot price rises above so-called "normal" relation to the futures. A premium on cash over futures is a very common phenomenon. For example, on the first trading day in November from 1901 to 1915 the lowest price of spot contract grain in Chicago was higher than that of May futures, six times, and in only three years out of the fifteen was the May future as much as seven cents higher than the cash.[1]

Even during the spring months, when we should expect the closest correspondence between the spot and the futures markets, there is no discernible tendency for the futures prices to equal the cash price plus a carrying charge. From 1901 to 1915 there were only nine years in which at their respective low points on the first trading day of March the May future was higher than the cash contract wheat. A similar situation prevailed in other markets. Comparison of the lowest prices for cash contract oats and for May futures on the first trading day in April, for the years 1901 to 1915, gives the following results: May price higher, four times; lower, nine times; the same, once; data insufficient, once. Examination of figures for corn prices has also failed to show any tendency for the futures to run uniformly above the cash.[2]

It is therefore clear that any attempt on the part of a miller or other hedger to make money by taking off hedges when the spread is abnormal is purely a speculation.[3] No one can ever predict from the quotations themselves what either the cash markets or the futures markets will do. All that can be said is that the two markets will come together by the last day of the month of delivery, but whether

[1] Data from Howard Bartels' *Red Books.*

[2] Data from sources previously cited.

[3] The following passage reflects a misunderstanding on the point which seems to be widespread: "Terminal elevators sometimes increase their profit by buying in their hedge at times when the spread narrows more than is normal. This will increase their profits, because, as it will be remembered, the spread at the time they bought cash wheat and sold it for future delivery was enough to cover the costs of carrying it in addition to some profit. And so, if the spread at the time of sale has narrowed more than the normal amount, the profit is increased by so much. They can buy again when the spread becomes normal." Fred E. Clark, *op. cit.*, p. 372.

the spread will disappear by a rise of the lower price or a fall of the higher, or a rise or fall of both with one moving more than the other, is a question for the speculator.

The only element in the entire relationship of the spot and futures which may be called a "control" is the fact that at any given time the futures prices cannot get above the spot prices by materially more than the carrying charge from the date in question to the date of delivery. This is true because of the possibility previously noted of buying grain in the spot market, selling futures to the same amount, carrying until the delivery date, and delivering the actual grain. The profit of any trader doing this would consist of the difference between the carrying charge (plus commissions and other charges) and the premium on futures over spot prices at the time he made the two contracts. Such operations would at once narrow the spread by forcing spot prices up and future prices down.

In this same connection, however, it is worthy of notice that it is not to be expected, even if grain is marketed freely, that the futures contract prices for all deliveries or for any two deliveries will fully discount the carrying charge between them. If the spread between the December and the May futures at any time is fully equal to the cost of carrying from December to May, any speculator may buy December grain and sell the same amount of May, knowing that the spread will not become wider, to his detriment, and may become narrower, to his profit. A speculation offering a chance of profit and no chance of loss, even if the chance of profit is not great, is an ideal speculation, and the competition of speculators to buy the nearer and sell the more distant future is bound to be sufficient to make such a situation quite abnormal and only of momentary duration. Spreads between futures contracts vary widely.[1]

The carrying charge bears exactly the same relation to the movement of grain into storage and out into the channels of consumption which the cost of shipping gold bore to the movement of specie in international trade in the days before the war, with this important exception, that whereas gold could be shipped in either direction, grain can be carried forward for future consumption but cannot be

[1] The price of May wheat at its low point on November 15, or the next trading day of the years indicated, varied from the low figure for December wheat on the same date by the following amounts: 1908, $4\frac{1}{2}$ cents higher; 1909, $1\frac{3}{8}$ cents lower; 1910, $5\frac{3}{4}$ cents higher; 1911, $6\frac{1}{4}$ cents higher; 1912, $5\frac{1}{2}$ cents higher, 1913, $4\frac{7}{8}$ cents higher; 1914, $6\frac{1}{8}$ cents higher; 1915, $1\frac{3}{8}$ cents higher. For data on carrying charges see notes above, pp. 229 and 233.

transported back into the past. Hence, as just noted, the premium on futures over spot cannot exceed the carrying charge, but the premium on spot over futures has no limit, while in the gold trade a shift in the premiums could cause a movement in either direction, so that the premium and the discount on foreign exchange both had definite limits.

CONCLUSIONS

In the light of these conditions, the limitations of the hedging market are clear. Whenever the cash price is above the futures, or below the futures by less than a full carrying charge, there is no such thing as a complete hedge for cash grain purchases. If the cash grain and the futures contract are selling at the same price, and the carrying charge till delivery month is four cents a bushel, the hedging contract will afford the buyer of cash grain complete protection against losses of more than four cents a bushel. Losses of less than that amount are rendered less probable, for there are many price changes due to causes which affect both markets alike, and against these the hedge is complete. But there is always the risk that the markets will diverge to the extent permitted by the carrying charge.

It remains to consider the case for the hedge buyer, for example the man who has contracted to deliver flour at a fixed price in the future and buys futures to protect himself against a rise in prices. If his selling prices for flour were based on the cash prices at times when the futures prices were lower, he would make an extra profit without risk by buying the futures to cover his needs. Under the ordinary conditions of competition, however, it is clear that sales of flour for distant future delivery must be based on futures prices for wheat; hence the purchase of futures is as good a hedge when futures are below the spot prices as when they are above.

Sellers of flour and similar products who protect their forward contracts by purchases of future contracts secure complete protection if they can wait till delivery date before securing their raw material and can use the grades of grain which are tendered on contracts, but if they must purchase at intermediate dates their protection is only partial, as the spot market in which they must buy their supplies may advance without limit above the futures price.[1]

[1] Adapted by permission from C. O. Hardy and L. S. Lyon, "The Theory of Hedging," *Journal of Political Economy*, XXXI (April, 1923), 276–87.

CHAPTER XIII

LIFE INSURANCE

The subject-matter of this chapter is discussed in terms of the following outline:

I. Introductory considerations

II. The risk insured

III. Policy contracts
  1. General classification of policies
  2. Classification according to conditions of maturity
  3. Classification according to premium payments
  4. Classification according to number insured
  5. Classification according to right to share in profits
  6. Standard policy conditions

IV. Insurance company organization

V. Selection of risks

VI. Calculation of premiums
  1. Mortality tables
  2. Interest rates
  3. Net premium, annual renewable term policy
  4. Net single premium, whole life insurance
  5. Level annual premiums
  6. Comparison of costs of various types of policy
  7. Loading

VII. Disbursement of life insurance funds
  1. Expenses
  2. Settlement of claims
  3. Cash surrender values
  4. Policy loans
  5. Dividends

VIII. Special types of life insurance
  1. Group insurance
  2. Industrial insurance
  3. Fraternal and assessment insurance
  4. Annuities
  5. War risk insurance

I. INTRODUCTORY CONSIDERATIONS

As was indicated in chapter iv, the most important method of getting rid of risk in business affairs through transfer to others is the

institution of insurance. In the same chapter, reference was made also to the character of the insurance contract as an agency for *reducing* risk through combination, through special knowledge on the part of insurers, and through preventive activity on their part. No further attention need be given the social theory of insurance here except to point out a contrast between life insurance and other forms of insurance.

In general, the theory of insurance is that the insured obtains a hedge against a contingency which, if it occurs, will cause him actual financial loss; and that contracts which purport to insure against a contingency involving no financial loss to the buyer of the insurance partake of the nature of gambling transactions.[1]

The chief practical consequences of this are, first, the doctrine of insurable interest, under which the person seeking to effect insurance is required to show that he has an actual interest in the event insured against, and second, the disapproval of overinsurance. In many lines of insurance, the liability of the insurer is limited to the amount of loss actually realized, regardless of the amount of insurance carried; and in practically all lines effort is made by insurers to limit insurance to the amount of risk actually undergone by the insured. In life insurance, however, the principle of indemnity can receive only partial application. The doctrine of insurable interest applies, but where an actual financial interest exists, insurers cannot, for obvious reasons, insist on insurance being limited rigidly to the amount of the actual risk. The value of a man's life is too delicate a question to be made readily the subject of contractual stipulation. Moreover, an individual is always held to have insurable interest in his own life; hence he is free to obtain insurance and to make it payable to whom he pleases, without regard to the character of the beneficiary's interest.[2]

In spite of this fact, from the standpoint of the insured and his dependents, the question as to what financial hazard is involved in his life risk is as vital as in any other type of insurance. Insurance up to the amount required to place the beneficiaries, in the event of

[1] The reader will not fail to note the sharp contrast in this respect between the theory of insurance and of hedging. In speculative futures markets, while the hedging function is generally asserted to constitute the chief social justification of the system, the question whether a given individual in operating through the market has an actual risk to hedge does not in any way affect the legitimacy of his operations.

[2] This is not true of the insurance written by the so-called fraternal orders.

the death of the insured, in the same financial position they would have been had he lived, is a hedge, and its purchase up to this amount may be sound investment policy; insurance in excess of that amount is a speculation, and a poor speculation at that, for the premiums are always so adjusted that the odds are in favor of the insurer.

II. THE RISK INSURED

One of the first questions which arises, therefore, in connection with life insurance pertains to the character of the risk against which a hedge is sought. The similar question which arises in connection with other types of insurance is comparatively simple, but the loss due to the death of a given individual is not susceptible of such exact determination as is possible with most types of loss.

What then is the measure of the value of a human life? A moment's consideration will show that the amount of the risk on a given man's life is not closely related to the needs of those who are dependent upon him. The primary object of insurance is like the objective of any other business transaction which looks to the future, that is, not to provide the minimum amount on which a family can survive, but to provide the maximum which can be secured without a cost in present sacrifices in excess of its value.

The principles upon which a correct estimate of the value of a man's life must be based are exactly the same as those governing the value of any other source of income. The financial value of a man's life is the present worth of the total amount of money which he may be expected to earn during the period of his normal working life minus the present worth of the total amount of money which he may reasonably be expected to expend for personal consumption. That is, if a man will earn on the average during the next five years $5,000 a year but will spend $2,000 a year for personal consumption or for other expenses which will normally be stopped in case of his death, the net loss to his family from his death will be $3,000 a year for the five years, and the equivalent in cash at the present time will be the present worth of a five-year annuity of $3,000, or, at 3 per cent, $13,739.10. If his normal working life is more than five years, or if his probable earnings above personal expenditures will vary during the period, the calculation is more complicated, but the principle remains the same. This does not mean, however, that the family need be protected by a whole life policy for the amount indicated. If a man is assumed to earn $2,000 per year above his maintenance from age

thirty-five to age sixty-five, the present worth, at 5 per cent of his life at age thirty-five is about $30,745, but a year later the value will be only $30,282. There will then be only twenty-nine years of work left in him instead of thirty, and his value must be written down for this "depreciation." On the other hand, the present worths of the earnings of all the subsequent years must be written up to take account of the shorter period for which they are now to be discounted, so that the actual decrease in his capitalized earning power is not $2,000 but $463.

In the case of policies taken out for business purposes, a different test of the amount at risk must be applied. Such policies are of several types. Sometimes insurance is carried by partners on one another's lives. Sometimes a corporation carries insurance on the life of its president or other valued executive. In both cases the object of the insurance is to offset the risk of loss to the business through disruption of the management. Sometimes insurance is carried on the lives of employees under contract, whose services are of such a specialized character and whose abilities are so rare that it would be difficult to replace them. Baseball players and artists are frequently so insured for the benefit of their employers.

In all these cases the amount at risk must be estimated by deducting from the value of the services rendered the salary or other compensation which is being paid or is anticipated to be paid during the probable continuance of the business relationship. In the case of an executive whose personal fortunes are bound up with the future of the insuring corporation or partnership, the value of the services may properly be capitalized for the whole business life of the insured, or a substantial portion thereof; in the case of employees under contract, only the services to be rendered during the term of the contract should be considered. Estimating the value of services, particularly where the services consist in large part of the use of one's name, is very difficult, but an approximation may be effected stating the question in this way: How much additional salary, above that now paid or expected to be paid, could the organization afford to pay rather than be deprived of the services?

Another type of business policy is that taken out to protect the interest of a creditor in the life of a debtor. When the debtor pays the insurance premiums as a means of securing credit, which is the usual situation, the amount at risk is simply the amount of the debt, plus any accretions of interest which may arise during the period con-

templated. If, however, the insurance is effected by the creditor and he pays the premiums, or desires to obtain sufficient insurance to protect him in case he is compelled to pay premiums in order to prevent lapse, a situation arises which has been the source of much confusion. It has been held, and the courts have at times sustained the view, that in this case there is an insurable interest amounting to the principal of the debt plus the premiums which the creditor would have to pay if he kept the insurance alive through the probable life of the debtor, plus interest. This appears plausible, but it is utterly impossible of application, for the reason that no matter whether the insurance be large or small in amount, it will inevitably be exceeded by the amount of premiums required to keep it in force through the life expectancy of the insured, with interest. If this were not true, the contract would be an impossible one for the insurance company to fulfil.

III. POLICY CONTRACTS

The contract of life insurance is expressed in a document known as a policy. The life insurance policy is distinguished from most other types of contract by the following peculiarities. First, it is a unilateral contract. That is, the insured may cancel the contract at any time, and under certain conditions may even recover a portion of what he has paid under its terms, while the insurance company has no such option, but is bound by the contract so long as the insured fulfils his obligations.

Second, although the contract is an agreement between two parties, the insurer and the insured, there is usually involved a third party, known as the beneficiary, to whom the insurance is payable in the event of the death of the insured within the life of the contract. Though not a party to the contract, the beneficiary may have title to the policy. Whether this is the case depends on the form of the contract. If the policy contains what is known as a "change of beneficiary clause," that is, a clause giving the insured the right to change the beneficiary at will, the title vests in the insured, and he may be required to assign it for the benefit of creditors in the event of his own insolvency. If there is no such clause, the beneficiary's consent is necessary for a change of beneficiary, and creditors have no claim to the surrender value of the policy. In either event, under the laws of most states, the proceeds of a policy payable to wife or children, if matured by death of the insured, are not liable for the debts of the insured, even though he was insolvent at death. Nor can such

funds, as a rule, be seized by creditors of a widow or minor children, so long as they are not mingled with other funds which are subject to such seizure.

A third peculiarity of the life insurance policy contract is the high degree of standardization which it displays. The details differ widely from one company to another, but the most important features of the contracts written by one company are almost identical with those written by another, so that it is possible to classify and describe them almost without reference to the peculiarities of practice of different companies.[1]

The standard types of policy may be classified on any one of several bases, as is indicated in the following outline:

CLASSIFICATION OF LIFE INSURANCE AND ENDOWMENT POLICIES

I. According to conditions of maturity
 1. Term insurance
 2. Whole life insurance
 3. Endowment life insurance
 4. Pure endowments
 5. Life annuities
 6. Life insurance with disability provisions

II. According to method of payment of premiums
 1. Single premium
 2. Limited payment life
 3. Level premium
 4. Natural premium

III. According to number of insured persons
 1. Individual
 2. Joint life
 3. Group

IV. According to type of insurer
 1. "Old line" or legal reserve policies
 2. Fraternal benefit certificates
 3. Assessment agreements
 4. Government (war risk) policies
 5. Miscellaneous agreements of insurance

V. According to the right of the insured to share in profits of the insurer
 1. Participating
 2. Non-participating

[1] This statement refers particularly to the contracts written by so-called old line insurance companies. Fraternal and assessment insurance, which differ radically from other types of life insurance, are discussed below.

Let us consider first the classification according to conditions of maturity.

A *term insurance* policy is a pure insurance contract. It provides insurance for a stipulated term of years, for a premium which may be paid either in advance or in a series of annual, semiannual, or quarterly payments. In case of lapse, there is, as a rule, no refund to the insured, and in case of expiry before the death of the insured the obligation of the insurer ceases. *Renewable term* policies have the additional feature that the insured is entitled at the expiration of the policy to take out another contract without medical examination at the rate which he would be charged at his attained age if he were accepted as a new applicant. *Convertible term* policies provide that the insured may at any time during the life of the contract, or at its expiration, exchange his policy for one of the other standard types of insurance contract, either paying the premium, which would be due if he were taking out a new contract at the time of conversion, or else taking the rate which would have been appropriate to his age at the time of the original application, and paying the back premiums with interest.

Whole life policies provide that the insurance shall extend throughout the life of the insured. As is the case with term insurance, various options as to manner of payment of premiums are offered. The whole life policy with level annual premium is the most popular of the standard types of policy.

Endowment life policies provide insurance for a stipulated term of years, most often twenty, with the provision that in case the insured survives the term of the contract the insurance is due at once. The pure endowment, a rare contract in its simple form, provides for the payment of a stipulated sum only in case the beneficiary survives a definite period. *Life annuities* provide an income of a stipulated amount throughout the life of the beneficiary. The life annuity is really a series of pure endowments for successive periods. *Disability clauses* in life insurance policies provide that the total and permanent disability of the insured shall operate either to terminate liability for further payment of premiums, or to mature the policy, or otherwise modify the terms of the contract.

Classification according to method of payment of premiums.—*Single premium* insurance is paid for in advance in a single payment. *Limited payment life* contracts provide insurance through the whole life but limit the premium-paying period to a term of years, most frequently twenty. *Level premium* means a uniform payment throughout the

premium-paying period. The most frequent types are the level annual premium and the level weekly premium collected on so-called industrial policies. A *natural premium* is a premium which increases from year to year as the risk increases. This type of premium is found only in renewable term policies.

Classification according to number insured.—This classification is nearly self-explanatory. Individual policies cover single lives; joint life policies mature at the death of either of two or more persons; group policies are written to cover a large number of persons jointly. Group policies differ from joint life policies in that they are not terminated by the death of one of the insured.

The classification of policies according to type of insurer is given detailed consideration in later sections of the chapter, and need not be analyzed here.

Classification according to right to share in profits.—Participating policies provide for the return to the insured of a portion of his premium in the event that earnings of the insurer justify such a "dividend." Customarily the premiums on such policies are made high enough so that there is sure to be some dividend. In other words, the dividend is in part a rebate of excess premium and only in part a true dividend or distribution of profits. Non-participating policies, as the name implies, carry no claim to dividends. "Participating policies at non-participating rates" are sold by a few companies. These are participating policies whose premium rates carry no excess "loading" to provide for dividends, hence pay only relatively small amounts, which are, however, true dividends.

Standard policy conditions.—The conditions embodied in standard types of policy issued by the majority of companies have been summarized by one writer as follows:

1. A copy of the application is attached to the policy, so that the insured may be in possession of the complete contract.

2. The policy contains a clause setting forth that it shall not go into force and effect until delivered during the lifetime and good health of the insured, and after the required premium has actually been paid.

3. The majority of companies have some restrictions relating to hazardous occupations during the first or first two policy years.

4. Most companies have some restrictions pertaining to military and naval service during war.

5. Practically every policy contains a "suicide clause" in one or another form.

6. The policy becomes incontestable after one or two years.

7. Provision for reinstatement of lapsed policies is made under varying conditions.

8. Thirty-one days' grace is allowed in the payment of every premium after the first.

9. Participating policies contain a clause stating the conditions under which dividends will be paid.

10. Every policy embraces a table specifically indicating the surrender values and loans available in each year, generally beginning with the third.

11. Most companies undertake to pay claims immediately after the receipt of proofs of death.[1]

Most of these clauses require no explanation. The suicide clause, formerly very sweeping in the policies issued by many companies, now generally covers only the first policy year. Its effect is to free the company from liability in the event that the insured dies by his own hand, whether sane or insane. The clauses relating to military and naval service usually only have application to the first one or two years, and the same thing is still more generally true of the clauses which restrict the insured in the choice of occupations and in his freedom of travel.[2] In all these causes, the intent of the clause is not to protect the company from liability in the case of such individuals as would normally run the proscribed hazards, but simply to prevent the insurer's securing an undue proportion of such hazards on account of a tendency of people to take out insurance after they have decided to commit suicide, to engage in dangerous occupations, or to travel in unhealthy environments.[3] The "incontestable clause" operates to debar the company from contesting the policy after a specified time, usually one year. Exception is always made of certain cases, including those in which the policy is invalidated on account of non-payment of premium, and sometimes such other items as military and naval service, fraud in application, etc. In case the age of the applicant has been understated, the company's remedy is not cancellation of policy, but the reduction of its liability to such amount as the premium actually paid would have purchased at the correct age of applicant. Incontestable clauses never waive the application of this remedy.

[1] Forbes Lindsay, *The Policy Contract*, p. 88. (Pamphlet published by the Pacific Mutual Life Insurance Company of California.)

[2] During the Great War most insurance companies waived restrictions on military and naval service, so far as the services of their own countries were concerned.

[3] Cf. discussion of adverse selection, p. 247.

IV. INSURANCE COMPANY ORGANIZATION

Aside from the fraternal and assessment associations described in a later section, life insurance organizations fall into two groups, known respectively as stock and mutual companies. A stock company is a business corporation organized to carry on the business of selling life insurance. In internal organization such a corporation differs little from corporations organized for other purposes. Customarily, its surplus is very large in proportion to its capital stock, for the reason that in its early history an insurance company requires but little capital, and the need for additional capital as its business expands can be met by accumulation of surplus more readily than is the case with corporations in most lines of business. The amount of owned capital needed, whether in the form of stock or of surplus, grows relatively smaller with the growth of the business, for the reason that very little of the capital is used for operating purposes. The insurance company's services are paid for in advance, and reserves owned by the policyholders are carried to meet the demands for disbursements which arise in the ordinary course of business. The function of the owned capital is to serve as a secondary reserve against abnormally high mortality experience, shrinkage in value of investments, or other contingencies which may make the theoretically adequate reserve insufficient to protect the interests of policyholders. As the scale of business grows larger, the probability of considerable deviations of actual from anticipated experience grows less; hence the expansion of capital need not be proportionate to the growth of the business.

Mutual companies have no stock. Their surplus as well as their reserves belong to the policyholders, the difference being that the reserve is an aggregate of individual reserves, each of a definite amount, while the surplus is a single fund, the joint property of the entire group of policyholders. The surplus alone performs the function which in stock companies is performed by the combined capital and surplus. It is the usual practice in organizing mutual companies to start with capital stock which is to receive a fixed rate of return, if earned, and to be retired by repayment to the stockholders when the surplus becomes sufficiently large to render such retirement safe. Sometimes a mutual company is formed by the retirement of capital stock of a stock company which was formed with no intention of mutualization.

Mutual companies are subject to the control of policyholders, who elect the trustees and officers. Since the policyholders are always

numerous and widely scattered, the individual policyholder, as a rule, has very little interest in the results of elections, and the tendency is strong for control once lodged in a certain group of individuals to remain in their hands so long as they care to exercise it. In this respect, however, there is little difference between the situation in a mutual company and that in a stock company with numerous small stockholders.

Stock companies are far more numerous than mutual, but so many of the larger companies are of the mutual type that the volume of business done by the mutuals is decidedly in excess of that done by the stock companies.

V. SELECTION OF RISKS

One of the most important problems confronting the management of any insurance company is the proper selection of risks to be insured. This is particularly true in life insurance, for the reason that the company has no option of canceling the contract, if after completion it is found to be unfavorable to the company's interests.

In a consideration of the methods used in selecting risks, it must be emphasized at the outset that it is not the purpose of selection to secure for the company an abnormally favorable experience. Insurance rates are based on statistical experience of mortality, and if the statistics are representative of the group to be insured there is no occasion for precautions to obtain a more favorable result than that which they forecast. The necessity for selection in favor of the insurer arises from the necessity of preventing selection adverse to its interests, for there is a constant tendency for persons who believe themselves to be poor risks to present themselves as applicants for insurance in greater proportionate numbers than do good risks. It has been well said that an insurance company could afford to insure at uniform rates all the people who pass a certain street corner on a given day, provided the fact of such intent were not made public, but if the facts were known a stream of the lame, the blind, and the stricken would be sure to pass that corner. In order to prevent discrimination against themselves, insurers are obliged to examine every application with great care, and the necessity for this scrutiny adds greatly to the expense of effecting insurance.

The principal methods used in selecting risks are, first, discrimination against certain occupations; second, discrimination against residents of certain localities; third, discrimination against individuals who attempt to procure insurance in amounts obviously in excess of

their normal needs—this includes cases in which the beneficiary has no insurable interest in the life of the insured; fourth, inspection and inquiry, designed to aid in estimating the moral hazard; fifth, medical examination; and sixth, family history. In the better companies, the medical examination is very thoroughgoing, and frequently results in the discovery of defects previously unknown to the applicant.

The immediate result of all these methods of selection is to secure, not the homogeneous group of risks aimed at, but the introduction of a group of extra-favorable risks. At the earlier and middle years of life, the mortality among persons who have recently passed an examination for life insurance is about half the normal mortality of those whose examination was five or more years previous. The "benefit of selection" decreases rapidly and is imperceptible after five years.

VI. CALCULATION OF PREMIUMS

The following discussion of the method by which life insurance premiums are determined makes no pretense of constituting an adequate discussion of the actuarial problems involved in the science of life insurance. Actuaries have developed a considerable body of mathematical science, making possible the calculation of premiums with a minimum of labor. The formulas given in this chapter are the basic formulas from which the actuarial short cuts have been developed, and are useful from the standpoint of justifying the rates rather than actually calculating them.

The calculation of an appropriate rate for an insurance policy requires that two fundamental assumptions be made. First, the assumption that among the group of insured deaths will occur with a definite frequency, and second, that the funds paid into the insurance company will be invested to yield a definite rate of interest. Both the rate of mortality and the interest earnings are of course estimates, and in the case of contracts which have to run for periods varying from less than a year to perhaps seventy-five years, there is obviously room for a considerable variance of opinion in making the estimate, and consequently a necessity for conservatism in making up the rates, so as to insure solvency on the part of the insurer throughout the life of the contract.

The standard device for calculating the rate of mortality is the mortality table, which enumerates the anticipated number of deaths from year to year in a hypothetical group of lives. The table most frequently used for this purpose in America, the so-called American Experience table, runs as follows:

AMERICAN EXPERIENCE TABLE OF MORTALITY

Age	Number Living	Number Dying	Age	Number Living	Number Dying
10	100,000	749	53	66,797	1,091
11	99,251	746	54	65,706	1,143
12	98,505	743	55	64,563	1,199
13	97,762	740	56	63,364	1,260
14	97,022	737	57	62,104	1,325
15	96,285	735	58	60,779	1,394
16	95,550	732	59	59,385	1,468
17	94,818	729	60	57,917	1,746
18	94,089	727	61	56,371	1,628
19	93,362	725	62	54,743	1,713
20	92,637	723	63	53,030	1,800
21	91,914	722	64	51,230	1,889
22	91,192	721	65	49,341	1,980
23	90,471	720	66	47,361	2,070
24	89,751	719	67	45,291	2,158
25	89,032	718	68	43,133	2,243
26	88,314	718	69	40,890	2,321
27	87,596	718	70	38,569	2,391
28	86,878	718	71	36,178	2,448
29	86,160	719	72	33,730	2,487
30	85,441	720	73	31,243	2,505
31	84,721	721	74	28,738	2,501
32	84,000	723	75	26,237	2,476
33	83,277	726	76	23,761	2,431
34	82,551	729	77	21,330	2,369
35	81,822	732	78	18,961	2,291
36	81,090	737	79	16,670	2,196
37	80,353	742	80	14,474	2,091
38	79,611	749	81	12,383	1,964
39	78,862	756	82	10,419	1,816
40	78,106	765	83	8,603	1,648
41	77,341	774	84	6,955	1,470
42	76,567	785	85	5,485	1,292
43	75,782	797	86	4,193	1,114
44	74,985	812	87	3,079	933
45	74,173	828	88	2,146	744
46	73,345	848	89	1,402	555
47	72,497	870	90	847	385
48	71,627	896	91	462	246
49	70,731	927	92	216	137
50	69,804	962	93	79	58
51	68,842	1,001	94	21	18
52	67,841	1,044	95	3	3

This table was prepared in the late sixties from the experience of two life insurance companies, and is not, as a matter of fact, an accurate table. Typically the experience of life insurance companies shows that the deaths in a given year are not more than from 65 to 75 per cent of those anticipated according to the table. More accurate tables have been compiled in recent years, but their adoption

is retarded by two considerations. In the first place, a tremendous amount of expense would be involved in changing from one table to another. In the second place, since the error consists of an overstatement of the mortality, its effect is to give the insurer a margin of safety, so that there is little inducement for any company to be the first to break away from the established practice. An overstatement of the mortality by 30 or 40 per cent does not necessarily mean that the insured is charged a correspondingly excessive premium. The premium includes not only a mortality charge but an allowance for expenses, and if the margin of safety in the mortality table were removed by the adoption of a more accurate table, the allowance for expenses would have to be increased. In fact, a few companies now write certain policies for a premium equal to that required by the theoretical mortality and the theoretical interest rate, getting their entire expense allowance out of the mortality saving and the surplus interest. So long as competition is active, the question whether the mortality table is a high or a low table presumably does not have very much bearing on the rates that will be charged. It does have a very definite bearing, however, on the relative rates charged for insurance at various ages and for this reason the continued use of a table which is now obsolete and probably never was accurate offers ground of criticism.

Interest rate.—The other fundamental assumption of actuarial science is the assumption of a rate of interest to be earned on the funds which are being accumulated during the life of the insured. The rates most frequently used at the present time for this purpose are 3 and 3½ per cent. Judged by the rates which have prevailed in the investment market during the last few years, these rates seem very low. It must not be forgotten, however, that the reserve on a given policy may remain in the company's hands for half or three-quarters of a century, and the company must guarantee its rates to the policyholder for a corresponding period. When the states first began establishing legal tests for solvency of insurance companies some sixty-five years ago, the rates used were nearly always either 4 or 4½ per cent. These rates were considered conservative, and they were in fact well below the actual earnings of well-managed companies. For forty years, however, the trend of interest rates was downward, and the states have twice had to change the rate to a lower one. Therefore, despite the high rates to be obtained on safe securities during recent years, it does not seem unlikely that before the maturity of contracts

now open, 3 per cent will once more seem a fair return on such high-grade security as that offered by the policies of strong life insurance companies.[1]

Before examining the methods used in calculating premiums, several terms must be defined. The *net premium* is the amount which the insurance company must charge, assuming a given mortality table and interest rate, in order to meet the claims of holders of maturing policies, without allowance for expenses or profit to the insurer. The *loading* is the amount added to the net premium to provide for these elements. The *gross premium* is the actual premium charged, being the sum of the net premium and the loading. The *mortality charge* is that portion of a premium which is required to meet death claims during the year in which the premium is collected. The *reserve* is the accumulated fund resulting from the excess of net premiums over mortality charges, together with interest accumulations on the reserve itself. The *surplus* is the fund of accumulated profits of the insurer. It arises from four principal sources: deficiency of mortality below that anticipated in accordance with the table; excess of interest earnings on the reserve over the rate assumed in figuring the premium; excess of loading over actual expenses incurred; and interest on the surplus itself (in the case of a stock company on the capital also).

The simplest type of rate-making problem is presented by the annual renewable term policy. To simplify it still farther, we will, for the present, disregard expense loading and confine attention to the calculation of the net premium.

Let us assume then that we wish to insure for $1,000 each for one year a group of men of normal health of age thirty-five. Our first problem is to determine the risk. The American Experience Table of Mortality shows that of 81,822 men living at age thirty-five, 732 will die within one year. The risk, therefore is, $\frac{732}{81,822}$, and if the premiums were paid at the same time that the policy falls due, the net premium charge would be $\frac{\$1,000 \times 732}{\$81,822}$, or $8.95. However, insurance premiums are paid at the beginning of the year and death losses are paid after the deaths occur. An accurate calculation, therefore, must take account of interest on the premiums from the time they are

[1] Cf. Zartman, *Life Insurance Investments*, pp. 55–60. (Henry Holt & Co., 1906.)

paid until the average time that the death losses occur. This is handled in practice by the simple assumption that the losses are all paid at the end of the year. Such an assumption is of course inexact. If death losses occurred uniformly during the year, the average time from the payment of premiums to the death of the insured would be six months, and the average time till the payment of the policy would be somewhat greater, say seven months. Since the mortality rate increases with advancing age, the actual tendency is for more than a proportionate number of deaths to occur in the latter part of each insurance year, hence the average time till the date of payment is still further lengthened. It is however considerably less than the full year assumed in the insurance calculations, and to that extent the standard method of calculation involves an injustice to the insuring company, which must be offset by an allowance favorable to the company at some other point in the calculations. As we have seen previously, the mortality tables overstate the actual mortality; this circumstance much more than offsets the advantage which the insured gains from the assumption of payment at the end of the policy year.

The present worth at 3 per cent of $1 due one year hence is $.970874. Under the terms of the contract, an insurance company issuing 81,822 policies may expect to have to pay 732 losses, which we will assume to be of $1,000 each. The present worth of $732,000 due one year hence may be expressed as $\$1{,}000 \times 732 \times .970874$, which is the amount the company must collect in premiums at the beginning of the year. The net premium on one $1,000 policy is therefore

$$\frac{\$1{,}000 \times 732 \times .970874}{81{,}822} \text{ or } \$8.69.$$

Our next step is to develop the net single premium for whole life insurance. This is the amount which paid in at once to the insurance company will enable it to pay each of the insured the face of his policy at the time of death. This involves simply a repetition of the preceding calculation for each successive year of life to the end of the mortality table. Out of a group of 81,822 persons of age thirty-five, the table shows that 737 will die at age thirty-six. To provide for losses on their policies, we must have in hand, not $737,000, but an amount which, if kept at interest for two years, will amount to $737,000 or $\$1{,}000 \times 737 \times .970874^2$. In like manner, to provide for the losses of the third year, we must have in hand $\$1{,}000 \times 742 \times .970874^3$, and to provide for the death losses of the ninety-fifth year,

when the last three survivors are expected to die, we will need $\$1{,}000 \times 3 \times .970874^{61}$. The sum of the amounts necessary for payments due on account of those who die in the various years of life is of course the amount required to provide for all the death claims, and this sum divided by 81,822 is the necessary contribution of each member of the group. This is known as the net single premium for a whole life policy for $1,000 at age thirty-five.

Annual renewable term policies and whole life policies sold for single premiums are rare. The most common type of insurance is the whole life policy with level annual premium, and it is this premium which we must next examine. The expression for this premium, using the same age, interest rate, and mortality table as before, is

$$\frac{\$1{,}000\,(732 \times .970874 + 737 \times .970874^2 + \;.\;.\;.\;.\; 3 \times .970874^{61})}{81{,}822 + 81{,}090 \times .970874 + 80{,}353 \times .970874^2 + \;.\;.\;.\;.\; + 3 \times .970874^{60}}.$$

This formula is derived as follows: The numerator represents the sum of the present worths of the amounts to be paid out during each year of life, and is the same as the net single premium calculated above, except that it has not been divided by 81,822. In other words, it is the net single premium for the group, not for the individual policy. The denominator represents the sum of the present worths of the amounts, which will be paid in to the insurance company if each of the insured pays *one dollar a year* for his natural life. One dollar from each of the insured yields $81,822, which is paid now; $81,090 will be paid one year hence by the survivors at that time, and therefore must be discounted at 3 per cent; $80,353 will be paid in two years and is discounted at 3 per cent compound interest for the two years; so we proceed to the sixty-first term, which is the present worth of $3, paid by the three survivors sixty years hence. Since the numerator of our fraction represents the present worth of the series of sums which the insurance company has to pay out, and the denominator represents the present worth of the series of sums which the company would take in if it charged each policyholder $1 a year, the fraction, as a whole, must represent the number of dollars a year which each of the insured must pay during his lifetime in order that the company may come out even on the whole transaction.

If this formula is thoroughly understood, the derivation of the premiums for the other usual types of insurance is comparatively easy. If, for instance, we desire to obtain the premium for a twenty-payment life policy, we notice that the sums to be *paid out* by the

company are exactly the same as under a whole life policy, but that the premium *receipts* stop at the twentieth payment, nineteen years hence. Hence, we keep our numerator unchanged, but cut off all but the first twenty terms of the denominator. If a twenty-year term policy is in question, the level annual premium is obtained by taking the first twenty terms of both the numerator and the denominator, the first twenty terms of the numerator representing the amounts to be paid out, those of the denominator representing the amounts that will be received in that time at \$1 a year from each surviving member of the group. For a twenty-year endowment policy, the calculation is the same as for a twenty-payment life policy, except that for the last term of the numerator we must substitute "$\$1{,}000 \times 65{,}706 \times .970874^{20}$," the numeral 65,706 representing the total number who survive to age fifty-four. Some of these will die during that year, the rest will draw \$1,000 each at the end of the year; for purposes of calculating the premium the result is the same as though all died during the year. This calculation is therefore exactly the same as the calculation for a whole life policy would be if the mortality table showed that all survivors died at age fifty-four instead of age ninety-five. It will be noticed that the whole life policy is the same thing as an endowment at age ninety-six, and is also the same thing for purposes of figuring the premium as a sixty-one-year term policy at age thirty-five.

The premium for single payment life is obtained in exactly the same way as the premium for twenty-payment life, except that only the first term of the denominator is retained, instead of the first twenty terms, giving us the expression:

$$\frac{\$1{,}000\ (732 \times .970874 + 737 \times .970874^2 \ .\ .\ .\ .\ 3 \times .970874^{61})}{81{,}822}.$$

The premium for a whole life policy is much larger than the premium for annual renewable term insurance at the same age. In other words, the purchaser of a whole life policy pays in the early years considerably more for his insurance than it costs the company to furnish it. The excess premium is held in reserve to enable the insurance company to furnish insurance at less than the mortality charge in the later years of life.

The sum total of these excess payments, together with their accumulated interest, constitutes what is known as the reserve. The reserve is not the property of the insurance company but is of the

nature of a trust fund held by the insurance company as an advance payment for insurance to be furnished later. It should be noted, carefully, however, that the amount in the reserve does not depend on the actual mortality of the insured group nor on the rate of interest actually earned. It is the amount which would accumulate if the mortality ran exactly according to the table and the interest earnings were exactly as assumed. Any saving or gain due to lowered mortality or higher interest earnings goes not into the reserve but into the surplus, and is the property of the company.

The theory underlying the popularity of all types of level premium insurance is, that if insurance is charged for at the current cost of furnishing the insurance, the cost gets prohibitively high in the later years of life. It will be seen, however, from the foregoing analysis of the way in which the premium is calculated, that the cost of insurance in the later years of life is just as great on the level premium plan as under the natural premium plan. The only differences are that under the level plan the individual pays a part of the cost of his insurance many years in advance and is credited with the interest at about the savings bank rate on these payments; and second, that under this plan those who die in the early years of life get no added return for the added payment they have made, while those who live through to an advanced age get the benefit of a lower premium on account of the contributions of their fellows. Of a typical group insured at age thirty-five, 20 per cent die within twenty years. The difference between what this 20 per cent pay for insurance under a level plan and what they would pay under the natural premium plan is their loss and the other policyholders' gain. This gain brings up the return on their advance payments for the 80 per cent who survive, from 3 or $3\frac{1}{2}$ per cent to about 5 per cent. In other words, the level premium plan offers the policy-buyer, in early middle life, a combination of two opportunities: First, to buy an insurance policy at what is presumably a fair rate for the insurance, and second, to invest the difference between the cost of insurance and the level premium in a security which offers a 20 per cent chance of loss and a 5 per cent rate of return, if the loss does not occur. Surely such a contract hardly constitutes an extremely attractive speculative investment. If it is judged favorably, it must be on account of its insurance, not its investment, feature.

What has just been said in disparagement of whole life, as compared with renewable term insurance, applies with much more force to limited payment life policies and with the greatest force to endow-

ment policies. In these higher-priced policies, the proportion of the premium which pays for the insurance service is relatively small and the remainder is an investment on which nothing will be realized unless one lives out the term of the contract, and no more than good interest if he does.

It is true that under the renewable term plan the cost of insurance becomes relatively very high after about age fifty-five. But, quite apart from the fact that many men no longer have dependents by the time they reach that age, it must be remembered that the amount of insurance needed by the time that age is reached is comparatively small, even if there are persons totally dependent on the earnings of the insured. At age fifty-five the average man has no more than ten years' probable earning life, and even though those be years of high earnings, the capitalized value of the short period is much less than the loss in case of death earlier in life. Moreover, if the money saved by buying term insurance, rather than limited payment or endowment policies, has been invested in safe securities the savings accumulations have operated to reduce the volume of insurance needed in the later years of life. The logical plan, therefore, is to reduce the amount of insurance during the later years in order to offset the effect of the rapidly advancing renewal rate.

It will be argued in reply that man will not save except under pressure, and that the endowment or limited payment policy is therefore the better purchase because it stimulates a more or less automatic type of saving. There are undoubtedly cases where this has been true, and the argument is not without force, though it can hardly be argued that enforced saving is always a gain. There must be some cases where the savings are carried over from a time when they are more needed to a time when they serve a less important want, but they are probably relatively few. It is undoubtedly true that most men who buy low-priced policies are apt to spend, rather than save, the money they thus cut off their insurance bill. But most men who take out high-priced insurance policies do not keep up the payments on them either.

There is no real pressure on anyone to keep up premium payments after a policy has been in force long enough to make the full reserve available as a surrender value; indeed the larger the surrender value grows, the greater becomes the incentive to take advantage of it.

The most serious practical objection to investment insurance is the fact that the saving it represents is nearly always made at the

expense of needed protection. Most men in moderate circumstances carry far less insurance than is necessary to protect their families. They cannot afford the premium payments necessary to give complete protection if in order to secure the protection they must also make payments to accumulate an endowment fund or to pay for the cost of protection at the advanced years of life; if pure protection were readily available and were encouraged as a sales policy, there would probably be a great increase in the amount of protection carried.

Loading.—It remains to consider the procedure by which the theoretical premium derived from the mortality and compound interest tables is weighted to provide for the expenses connected with the operation of the insurance company, the dividends paid to stockholders or policyholders, and the increase of surplus which is necessary if the company is to be enabled to take care of an increasing volume of business with safety. The addition to the net premium made for these purposes is called the loading.

The process of figuring loading is less scientific than that employed in figuring net premiums, and the results obtained differ greatly from one company to another. The difficulty in determining proper loading arises from the fact that while most companies write a wide variety of policies, the major part of their expenses are either jointly due to the whole volume of business, or if attributable to specific policies cannot be assessed to them accurately in advance. Approximations must be made, and the degree of accuracy in these approximations, which it is worth while to aim at, is a matter concerning which opinions differ widely.

The following are the fundamental principles which are generally accepted as governing the proper distribution of expense: First, all expense directly attributable to the investment operations is taken care of by the investment department. This expense appears as a reduction in the percentage earned on the investments; hence does not have to be taken account of in the loading. Second, expenses which vary with the amount of the premium (such as commissions) are best assessed as a percentage of the net premium. Third, expenses which vary with the size of the policy, and in general those which do not fit into either of the other categories are best taken care of through a charge proportionate to the face of the policy. General administrative expenses and settlement costs are examples of the charge most often assessed in this manner. It is this third group of expenses which are handled in the least satisfactory manner, as a considerable

proportion of the expenditure really depend on the number of separate policies rather than on their size. The logical method of assessing these costs would be a flat charge of so much per policy, but such a charge is never used in practice, presumably because it would make the smaller policies disproportionately expensive and thereby create difficult problems for the sales force.

The methods usually employed are the following, the details of application showing, as already noted, great variation: (*a*) a straight percentage of the net premium; (*b*) a percentage varying with the type of policy; (*c*) a flat sum plus a percentage of the net premium; (*d*) a percentage of the net premium plus the same percentage of the corresponding net premium for ordinary life policies. The last method is defended on the ground that the cost of the insurance features of the contract, rather than the cost of the combined insurance and investment features, should be given considerable weight, since the investment fund carries its own expense loading separately. This method results in a higher loading on all policies issued at advanced ages, and also on the cheaper forms of policy, such as term policies, but this is deemed equitable in view of the fact that these are the types of policy on which the gains from favorable mortality experience are normally least.

Participating policies regularly carry an excessive loading, intended to make certain the payment of dividends. The method used in determining the amount of this excess loading is of little importance to the policyholder, provided the method used in apportioning dividends is consistent with it.

VII. DISBURSEMENT OF LIFE INSURANCE FUNDS

The funds received by an insurance company from its policyholders are disbursed in five principal ways. The first charge against them is of course the cost of doing business. A second principal class of expenditure is the payment of matured policies. A third is the payment of surrender values. A fourth is the making of loans to policyholders, and a fifth is the payment of dividends to stockholders and policyholders.

Expense.—The expense item needs no special discussion. It includes commissions on new business and on renewals, expense of medical examination and the investigation of applications, the investigation of claims and the contesting of those whose character makes contest advisable, the control of investments, and the general

administrative and clerical costs. The heaviest costs are those involved in selling, in investigating applications, and in recording the issuance of policies. Usually, this initial expense amounts to 75 or 80 per cent of the first year's premium.

Settlement of claims.—The disbursement of funds in payment of matured policies is not an expense but a return of capital to its owners. There is probably no large class of claims, with the exception of requests for withdrawal of bank deposits, which are settled with so little friction as the settlements made under life insurance policies. It is the policy of reputable companies to contest claims only in cases where there is fairly conclusive evidence that the company has no real liability. In the early days of insurance, some companies followed the policy of contesting claims on technical grounds, though this practice was probably more prevalent in fire than in life insurance. Such contests are expensive, partly because juries are apt to be prejudiced in favor of claimants, and judges interpret the contracts as strictly as possible against the companies, partly because of the adverse advertising which an insurance company gets from its contests.

Optional settlements.—Most insurance policies provide for an optional settlement in the form either of a cash payment in full or of an annuity to the beneficiary. The *instalment plan* provides simply that the insurance company shall pay the amount of the insurance in, say, twenty instalments to the beneficiary or the beneficiary's estate. In this case there is an allowance for interest which substantially increases the sum to be paid.

The *life annuity* plan of settlement provides a payment of a certain sum per annum to the beneficiary for life. The amount of the annual payment, under this contract, depends upon the age of the beneficiary at the time the contract is taken out.[1]

A *continuous instalment* contract is a combination of the instalment and annuity plans, providing for the payment of the insurance in annual instalments over the life of the beneficiary, or for a specified term of years, whichever is the greater.

Under all these instalment contracts, the beneficiary is relieved of the problem of investing the proceeds of the policy, and incidentally also of the payment of taxes upon such investments. The rate of interest allowed is not, by present standards, high, but the fact that the rate is guaranteed for a term running far into the future, the high degree of safety, and the relief of the beneficiary from responsibility

[1] For further discussion see pp. 276–80.

go far to compensate for the moderate interest rate. Except in the cases where the proceeds of a cash settlement could advantageously be used to pay off existing indebtedness, some sort of annuity or instalment settlement is more likely than not to be of advantage.

The following quotation emphasizes, but does not exaggerate, the advantages of the annuity as a method of settlement:

There are two modes of settlement of a life insurance benefit at the death of the insured. The first is to pay down the whole sum at once; and this method has been followed, with only rare exceptions, since life insurance began. The second mode is to pay an annuity to the beneficiary for a certain period or for life; this has been the exception. But this latter plan received impetus through legislation in New York State in 1906, which included in a standard form of policy contract a privilege by which the insured during his life might elect to have the principal sum paid in periodical instalments after his death. Since then one after another of the American companies has issued policies containing on their face specific provision for the payment of the benefits in monthly instalments of selected amounts and for selected periods.

Fire insurance on a merchandise stock is for the purpose of providing funds with which the stock, if burned, may be replaced without loss to the merchant. In this case, the sum to make replacement is required to be available immediately after loss by fire in order that new stock may be purchased and business resumed. But human life is different, it is in no sense possible of replacement except by in some manner arranging for a continuance of its income or productive value which would cease at death. And, moreover, the capitalized value of the life paid in one sum is not needed and cannot be used for the emergency called for by family insurance, except that it be invested to produce income.

It is in the nature of things that humankind should be possessed of ungratified wants which more means would fill; it has been so since commencement of time; without this human trait material progress would cease. It is common in both man and woman; but possession of means earned by one's self checks desires; unearned means fosters them, hence because man has more commonly been the earner and provider and woman the dependent and recipient, the trait is more pronounced in her. With the beneficiary of the small insurer it manifests itself in wish for better quality and make of articles of dress—in a new hat instead of one made over on last year's frame; in small articles of personal adornment which have been promised since long ago but have never come. Yes, so many things are needed; it seems as though they had been accumulating since wedding day. And so they have; and so they will continue to do; for it is the rare nature of wants that their fulfilment gives birth to greater ones.

Doubtless some beneficiaries under lump sum life insurance policies are endowed with a measure of mental and moral poise which no great calamity could overturn. But this cannot be known of a certainty as to any particular one until the test is made. This one may possess the quality of self-denial in degree that would safely guard against use of the fund for unnecessary self-expenditures; but this is only another way of describing her who has a good and charitable heart, for charity and self-denial go hand in hand. Caution would prevent bestowal of any portion of her insurance money in charity on strangers. Would it help if the supplicant were a relative?

All have poor relations; the insured may not have been able to help during his lifetime, but there is now a large sum of money in bank. It is not charity that is asked, merely a loan is wanted; and long before the money is needed it will be repaid, if all goes well. Shall it be refused? No. Husband would give it if he were alive; he often said he would be glad to help if he could; but he never had so much money in bank without immediate use for it. Nay, this excuse would not be required; the money would be "loaned" in any event; for denial would be impossible to this kind-hearted woman with the means at hand. Nor would repeated requests of the same nature be denied if accompanied by valid or plausible reasons.

Thus under lump sum policies have thousands of men unwittingly insured their lives in part for the benefit of needy relations and friends whom during lifetime they could not afford to assist. For unless he does help in the support of poor relations and friends during his lifetime, no man intentionally includes provision for them in his life insurance. If he does provide for them during life, then it is unfair to his beneficiary if he does not include account of them in his insurance. But if he cannot help them while living, it is unlikely that he can afford the high premium payments necessary to provide for them after death.

The possession of a sum of ready money renders its owner liable to become the object of designing persons seeking dishonest advantage with plausible schemes dressed up as sound investments. The beneficiary is inexperienced in investments. Knowledge of this is not lost on promoters, and leads to her being sought out as an easy mark for their designs. No sooner does the fund reach her hands than skilled wits are placed in the balance against hers. With what result is well known; a woman unsophisticated in sharp business practices is attacked by a swindler at a time when she is without defense, and imposed on and robbed.

But assuming the investment to be a good one, still a difficulty and a danger remain. Will the income be sufficient to meet expenses? If not, then a part of the security must be disposed of from time to time to obtain principal to eke out living expenses. But this may not be necessary. Will the money be left invested? The security is transferable, and therefore salable; the better the value, the lower the interest; the lower the interest, the greater the temptation to sell and reinvest in something paying more;

and the higher the interest. the less the value, and the more danger of loss of interest, or of both principal and interest. It may be borrowed upon any day. It is an object of taxation. It is subject to attachment. And finally, no matter how high the rate, the interest income from the investment will be equivalent to a low rate on the whole amount received from the insurance company, because it is unlikely that all of the insurance money will be invested.

These modes of paying the benefit may be had in any form of policy—Term, Whole Life, Limited Payment Life or Endowment. It costs nothing extra; the premium charged is exactly proportionate to that for a policy providing for an equivalent single sum benefit. The company acts as trustee and pays out to the beneficiary the sums provided, in amount and in time approximating the manner in which the income of the insured was received during life. At the death of the insured the financial result is the same as if the discounted value of the unpaid instalment benefits provided for became automatically invested at $3\frac{1}{2}$ per cent compound interest; and future payments continue to earn and compound at the interest rate until all of both principal and compounded interest is paid as provided. Thus, for example: in a policy providing for $50 per month for forty years the discounted value of the future benefits to be paid is $13,089, and it is on this sum that the insurance premium is charged; but the total sum guaranteed to be paid over forty years is $24,000, or $13,089 of principal and $10,911 of accumulated interest.

A life insurance benefit left in this manner can be used only for the purpose intended: namely, for the necessities of life and to keep home together. It cannot be sold or borrowed upon, because it is not transferable. It can be attached for debt only if contracted for the necessaries of life. It is free from taxation and charges of fees of any kind whatsoever; and finally, the law prohibits the company from discounting and paying the amount in one sum to the beneficiary upon her request unless the insured so consented during his life.[1]

The continuous instalment is particularly advantageous in cases where the insured desires to provide an income for a widow for life and for children for the period of their minority. The life annuity feature insures an income to the widow throughout her life, while the "continuous" feature provides that in case of her early death the payments will be continued for a term of years sufficient to bring the youngest child to the age of self-support.

Surrender values are now a regular feature of practically all life policies written by legal reserve companies, except term policies. During the early history of life insurance, it was quite commonly

[1] From an anonymous pamphlet, *Luxuries or Necessities*.

true that a policyholder who failed to keep up his premium payments forfeited all his rights under the policy. Such a practice, however, was obviously unfair to the holders of the higher-priced policies, such as endowment policies, for the man who lapses after carrying a high premium policy for a number of years has paid much more than the man who has been carrying whole life or term insurance, and has received no more in return. The issuance of policies containing a provision for surrender value began in the late fifties, and in 1861 Massachussetts passed the first non-forfeiture law. Similar laws have since been enacted by most states.

The provisions regarding surrender relate, first, to the length of time a policy must be carried before any surrender value accrues; second, to the amount of such surrender value; third, to the manner in which it shall be paid. In most cases there is no surrender value till the third or fourth year, though some grant it in the second year. From what has been said above concerning the excessive proportion of the expenses which attach themselves to the first policy year, it is obvious that a company cannot afford to grant liberal surrender values till a sufficient number of premiums have been paid to compensate it for this expense.

From the third year to a later date, varying from the fifth to the fifteenth year, the surrender value consists of the legal reserve minus a surrender charge which gradually decreases as the policy grows older, and in no case, with most companies, exceeds $2\frac{1}{2}$ per cent of the face of the policy. The tendency both of legislation and of competition between insurance companies has been to increase the liberality of the surrender values, and the popularity of these provisions is evidenced by the fact that from one-fourth to one-third of the policies terminated are surrenders and lapses.[1]

Three methods of payment of the surrender value are generally provided: cash settlement, extended insurance, and paid-up insurance. Under the extended insurance plan, the policy continues in force for a limited period; under the paid-up insurance settlement, the face of the policy is reduced and the policy remains in force throughout the life of the insured. Under both the extended insurance plan and the paid-up insurance plan, the amount of insurance is such as the cash surrender value will purchase as a single net premium. If the insured

[1] The statement is perhaps too sweeping, as a very large proportion of the lapses occur in the first or second year, before the liberality of the surrender provisions is a factor.

indicates no option, but simply stops paying premiums, the extended insurance plan is applied automatically. At the close of the extended insurance period, the company, before closing the account, must obtain evidence that the insured is still living. As the beneficiaries of lapsed policies are frequently ignorant of the existence of the extended insurance, which may run for many years, there is often no small difficulty in determining whether liability actually exists.

Another method of handling lapsed policies has recently been introduced—the automatic premium loan. Under this plan, the cash surrender value is applied as a series of loans to meet successive premium payments, and the policy is kept in force till the cash value is exhausted. The advantage of this plan over the extended insurance plan, to which it is very similar in effect, is that under the premium loan plan the policy does not technically lapse, so that the insured retains the right to reinstate himself by paying the back premiums, with interest, without medical examination. On the other hand, the policy expires somewhat sooner under this plan, as 5 or 6 per cent interest is charged against the premium loan, while the reserve is accumulating interest at the rate of only 3 or 3½ per cent.

Policy loans.—While the making of loans on the security of policies is not theoretically a method of disbursing funds except for temporary purposes, in practice a large proportion of the accumulated reserve is actually returned to policyholders, through loans which stand as permanent obligations of the policyholders and are deducted from the face of the policy at maturity. From the standpoint of an insurance company, a loan made to a policyholder and secured by his policy, provides an investment in most respects ideal. There is no cost for investigation of the application, or for collection, and there is no risk, for the applicant is borrowing only his own funds, and can never secure a loan in excess of the surrender value of his contract. Moreover, the rate of interest charged on policy loans is higher than that obtainable in most years upon safest investments, though this is not necessarily true in the years of high interest rates when the largest volume of policy loans are made.

From the standpoint of the company, there are two objections to policy loans. In the first place, the loan privilege creates some risk of embarrassment through an excessive number of demands for loans at the same time. With the present almost universal acceptance of the principle of making loans on demand up to the full cash surrender value of the policy, the risk of a run on the reserves of insurance

companies, in time of financial crisis, is not negligible. Some authorities are inclined to regard this as a serious objection to the extension of the loan privilege, though no trouble has yet resulted from it. Upon the whole, the risk seems much less serious in the case of insurance companies than is the similar risk in the case of savings banks, and the experience of the latter indicates that the danger is not sufficient to justify the abandonment of such a profitable field of investment.

The other objection to policy loans, more serious from the standpoint of insurance administration, is the fact that the issuance of policy loans has a marked influence in increasing the lapse rate. The reasons for this tendency will be made clearer by an examination of the advantages and disadvantages of the policy loan from the standpoint of the policyholder.

Policy loans are usually taken out under one of two conditions: either the insured resorts to the company as a source of temporary accommodation to meet some special need or else he secures capital for permanent investment, or for the retirement of debts elsewhere, by contracting a loan which he has little or no intention, at least no prospect, of repaying.

The first class of loans are sound financial operations. If an individual is going to borrow the money somewhere anyway, the reserve on his life insurance policy offers several advantages. The insured can secure the loan on demand without any investigation of his credit standing, and he will not be interrogated as to the purpose for which he intends to use the money. Moreover, after the first six months he can pay off his loan at any time, without loss of interest, and the rate charged is usually lower than the rate he would pay at his bank.

Comparatively few policy loans, however, are of this type. It is stated in fact that only 8 per cent of policy loans are ever repaid before the maturity of the policy.[1] Most students of the question seem to agree that such permanent policy loans are objectionable from the standpoint of the real interests of the borrower. The following statement from a prominent insurance company official is typical of the opinion generally expressed on this question, both by insurance company officials and by academic students of insurance theory.

The policyholder's privilege of borrowing a portion of his reserves on the security of his insurance contract was a development of competition,

[1] Riegel and Loman, *Principles of Insurance*, p. 107.

and like the giving of surrender values, the idea grew and the original privilege was extended until the plan became permanently fixed upon the business by being made a requirement of the law.

As originally intended, this privilege would have been a great service to the policyholder and to the companies as an attractive feature or inducement to insure, but as in the case of surrender values, the loan privilege has been carried to extremes, the general practice now being to loan, as well as to pay as a cash value, the full reserve upon a policy after the tenth year of insurance.

The primary purpose of this law, which fastens a banking function upon life insurance, was to enable the policyholder to have the use of his reserves in time of financial stress. It was believed that this would be of great value in preventing lapses by permitting the insured to apply his reserves to the payment of premiums when short of cash, and that the plan in general would prove an attractive one as an inducement to the taking of insurance.

These advantages are freely conceded, but experience has demonstrated that they have been largely neutralized by the disadvantages and the abuses which have resulted from the expansion of this loan privilege. These loans operate directly against the beneficiary by reducing the protection, for only a small per cent of the loans are repaid by the borrowers and the rest must be deducted from the claims at death or from surrender values. They also encourage lapsing by the additional burden placed upon the policyholder. Many borrowers, finding their protection reduced, their premiums remaining the same and an annual interest charge to pay, become discouraged and lapse or abandon their policies. An injustice is also done the remaining policyholders by the low withdrawal charge and the possible danger of a "run" on reserves in time of panic. Broadly speaking, the policy loan privilege discourages saving and encourages spending.

Year	Ratio of Loans to Reserves (Per Cent)
1890	2.97
1895	3.62
1900	6.13
1905	9.83
1910	15.35
1915	17.86

Those who borrow on their policies are not satisfied with small amounts. They are tempted to withdraw all the money they can get, and having gotten it, they are tempted to spend it for pleasure or to risk it in business or speculative ventures. The result is that a temporary loan develops into a permanent obligation, and the idea of repaying it is abandoned Consequently when death comes the widow finds that her life insurance

has been materially reduced and then bitter disappointment and sometimes misery and hardship follow.

It is not surprising, therefore, that the practice of borrowing on policies has come to be known as borrowing from the widow and orphan. No concession ever granted to policyholders has operated so greatly to the disadvantage of beneficiaries.

One class of loans—those taken out on policies issued for the protection of business ventures or for purely commercial purposes—are justifiable; they are serving a purpose for which the contract was entered into. But one cannot view with equanimity the taking of loans on policies issued for family protection, and unfortunately the greater number of loans are taken on this class of policies.[1]

The case presented against the policy loan is forceful, but in the author's opinion not convincing. Let us examine it more closely. In the first place, the characterization of insurance borrowing as borrowing from the widow and the orphan, which is a standard point in the case against policy loans, carries with it an implication that borrowing from some other source would not have the same effect on the financial status of the widow and the orphan. It is obvious that if the policyholder borrows from some other source, and the debt remains unpaid at the time of his death, it will operate to reduce his estate just as the policy loan operates to reduce the face of his policy. Assuming that the beneficiaries are the heirs, the only case where they benefit from placing the loan somewhere else, rather than with the insurance company, is the case where the widow and the orphan desire to evade the payment of the debt, and the estate, aside from insurance, is not large enough to cover it. The proceeds of insurance policies, so long as they are kept intact, are in most states exempt from the claims of all creditors except the insurance company. Hence, whoever desires to borrow in such a way that his heirs may be able to evade the payment should avoid the policy loan. Such cases, however, are not particularly frequent, and ought not to work a condemnation of the loan privilege. The real test of the desirability of contracting a loan is not the source from which the funds are obtained but the purposes for which they are used. If the money is used to invest wisely in a home, in the reduction of existing indebtedness, or for safe investment elsewhere at a higher rate of return than the interest charged by the nsurance company, there is no reason why the reserve should not be borrowed.

[1] Adapted by permission from J. B. Lunger, "The Problem of Cash Surrender and Loan Values," *Annals of the American Academy of Political and Social Science*, LXX (March, 1917), 54-58.

The real objection to policy loans, aside from an ancient objection to all borrowing, which seems to be nearly obsolete except as it appears in discussions of this particular question, lies in the fact that such loans are expensive. The money which the policyholder borrows from the company at 5 or 6 per cent is the same money which he is loaning to the company at 3 or $3\frac{1}{2}$ per cent. To make the case concrete, let us examine the case of an individual who is carrying a whole life policy, premium $15.63, on which he has made twenty payments. His loan value is $230.50. If he is to borrow that amount of money at all, he probably cannot do better than to borrow it from the insurance company. If he does so, however, and pays 6 per cent interest, he begins at once to pay $29.46 per annum for $769.50 insurance. If he is still a good insurable risk, it will pay him better to let his policy lapse, take the cash surrender value, and take out a new whole life policy for $1,000 at a premium, of say, $30.05, thus gaining $230.50 additional protection for 59 cents additional annual cost.[1] A recognition of the relatively expensive character of the protection afforded by policies on which the reserves have been borrowed must be a fundamental reason for the high lapse rate among borrowers.

The borrowing transaction does not, however, create the unfavorable financial situation in which the borrower finds himself. It merely calls attention to it. If the policyholder in our illustration does not borrow on his policy at all, but merely keeps it in force, he still pays, not $15.63 for $1,000 insurance, as he doubtless believes, but $15.63

[1] The rates used in the illustration are those charged by a well-known company. A similar calculation for the tenth year of the life of the same policy shows a gain of $98 in protection and an actual reduction of 93 cents in annual cost from lapse and reinsurance as compared with borrowing the reserve at 6 per cent. Like calculations using the rates of three other companies show the following results: Lapse and reinsurance at the end of ten years, as compared with permanent borrowing of the reserve, results in a reduction of annual cost of 96 cents in company A, 74 cents in company B, and $1.04 in company C, with a gain in protection of $98 in each case. At the end of twenty years, lapse and reinsurance give an added cost of 80 cents in company A, 97 cents in company B, and $4.23 in company C, for which $230.50 additional protection is obtained. In this calculation, reserves have been figured on the basis of 3 per cent; if they are figured at $3\frac{1}{2}$ per cent the gain from lapse and reinsurance is slightly increased. If policy loans are figured at 5 per cent, the gain from lapse is much less, but in most cases is still apparent. The foregoing calculations are all for non-participating policies; in the case of participating policies, the calculation is much more complicated and involves a large element of approximation. On account of the practice of paying increased dividends on older policies, it is probable that in most cases permanent borrowing on participating policies is cheaper than lapse and reinsurance.

plus the income he could secure from $230.50 for $769.50 of insurance. For the individual who has become uninsurable since he took out his original policy, such a contract may be very favorable, but for the good risk it is much less favorable than it appears.

The reason for this tendency of an insurance policy to become more and more expensive, so far as its real insurance features are concerned, is primarily the fact that the longer one carries his policy, the large the fund which he has accumulated and on which he is receiving only savings bank interest. The man who is borrowing at 6 per cent, from any source, cannot afford to invest at 3½ per cent.

All this fortifies the contention of a previous section, that renewable term insurance, first, when obtainable, and next to that whole life insurance, are the most economical and logical types of insurance from the standpoint of the policyholder, except in those cases where the mild degree of compulsion afforded by the insurance contract enables a policyholder to save what he would otherwise squander.

VIII. SPECIAL TYPES OF LIFE INSURANCE

Group insurance.—One of the newest developments in life insurance is the group policy. This is a term policy written on the lives of a large number of individuals, employees of a single firm, and paid for by the employer. The typical provisions of such a contract are:

1. No medical examination is required, except when the number of employees is small. Reliance is placed on the operation of the law of large numbers to secure a normal mortality experience, while the character of the group is usually such as to protect the insurer against the adverse selection, which would be likely to result from the omission of medical selection on ordinary life policies. A group of from fifty to a hundred lives is considered sufficient to insure working of the law of averages.

2. The policy is taken out by the employer; the premiums are paid by him; but the proceeds are payable to the heirs of the insured employees, either directly or through the employer.

3. Each policy is written as the result of a special investigation. The rate charged depends on such factors as the age distribution of the insured;[1] the proportion of women employees, the standard of living; the occupational risk of injury or disease; and similar factors.

[1] Not simply the average age. Examination of the mortality table will show that two groups of the same average age, but having differing proportions of persons of very advanced and early age, will show very different mortality rates during the life of a short term policy.

4. New employees ordinarily come under the protection of the policy automatically, under specified conditions, the premium rate being adjusted from month to month as the hazard changes.

5. Employees severing their connection with the organization automatically lose the protection of the policy, unless the employer chooses to continue paying premiums to maintain insurance on the lives of employees during temporary lay-offs. In some cases the employee is given the privilege of retaining protection by assuming responsibility for payment of premiums at a rate appropriate for his age. Returns of unearned premium, without surrender charge, are made in cases where the liability of the insuring company is reduced through the separation of employees from the pay-roll.

6. Several methods of determining the amount of liability are in use. The following alternatives are suggested by one insurance company which has been a leader in the development of group insurance:

1. The same amount of insurance for all employees, such as $500, given either immediately on employment or after a waiting period, such as six months or one year.

2. An amount equal to the annual wage of an employee or some percentage thereof.

3. An amount to be based on length of employment, such as an initial amount of $500 after one year of employment and adding thereto $100 for each additional year of service until a maximum of some fixed amount has been attained, such as $1,000 or $1,500. Any other plan or formula which meets conditions more favorably than those suggested, may be adopted.[1]

7. Provision is frequently made that the policy shall mature immediately as to any employee who becomes totally and permanently disabled. In such cases it is customary to provide for the payment of the insurance in instalments.

The primary purpose of group insurance is to increase employees' good will toward the organization which they serve, thereby reducing labor turnover and adding to the efficiency of the individual laborers. It is believed that in many cases money expended in paying premiums on a group policy will buy more added productive effort than will a similar amount of money spent for the same purpose through increased wages. It is also argued that an insurance policy will serve as an especially attractive feature of the service in the case of married

[1] From an analysis of group insurance published by the Travelers' Insurance Company.

employees and, in general, among the steadier class of workers whose continuous services it is especially important to retain.

So far as the insurance features of the group insurance plan are concerned, the device seems so far to have been eminently successful. The elimination of medical examination, the small amount of work connected with the issuance and recording of policies, the simplification of collections, and the lowered commissions which may properly be paid to agents for selling insurance on the wholesale plan, combine to make this an especially economical and at the same time profitable type of insurance. Whether the plan has been equally successful as a device for improving the relations of employers and employees is uncertain. The question is at best a difficult one to answer accurately, and the period during which group insurance has been in vogue is so short, and labor conditions have been so unstable during that period, that no real test can as yet be said to have occurred.

Industrial insurance.—Another type of insurance which deserves particular mention is the so-called industrial policy. This is a policy for a small amount, usually less than $500, on which the premiums are collected weekly by a house-to-house canvasser, instead of being mailed to an agent of the company, as is the practice with most forms of life insurance. The amount of the premium, instead of the face of the policy, is stated in round numbers, the most frequent unit being five or ten cents per week. The term "industrial" is applied to these policies not because they have any connection with industry but because the greater number of such policies are sold to wage-workers. Such policies are regularly written on the lives of children as well as of adults, the object being to provide for the expenses of last sickness and burial. For this purpose such insurance performs a useful service.

The chief objection to the industrial policy is its high cost, the premium usually working out about double the cost of whole life insurance of the ordinary type. No cash surrender or loan value is usually allowed, until the policy has run for a very long period, but paid-up insurance for a portion of the face is allowed in cases where the policy has been carried for a few years.

The high cost of this type of insurance is due primarily to the excessive cost of collection. Another reason is found in the high lapse rate, which makes the selling cost greater than would be the case if the policy once placed did not so frequently have to be replaced by another in order to keep the volume of business constant. A third

reason for the high cost is found in the mortality rate, which is considerably higher than is the case with ordinary policies, partly on account of a somewhat higher normal death-rate in the class of the population who make up the bulk of the policyholders, and partly on account of the lack of medical examination. Formerly it was the practice to require a very superficial examination by a physician, but the present practice, so far as policies of less than $500 are concerned, is to place on the agent the responsibility of inspecting the candidate and certifying to his apparent good health. Naturally, this method leaves opportunity for rather more adverse selection than is possible where regular medical examination is required, though the difference is less than might readily be anticipated.

Fraternal insurance.—One of the most interesting developments in American life insurance is the insurance written by the various fraternal orders, beginning with the organization of the Ancient Order of United Workmen, in 1868. The original idea underlying the work of these companies was to make insurance incidental to the operation of a system organized primarily for the purposes of mutual assistance and social intercourse within a selected circle. Insurance of this sort characterized the medieval guilds, and has frequently been written as incidental to organizations formed for other purposes. In the case of the fraternal orders, however, the insurance feature has proved so popular as to overshadow the social side of many of the organizations, so that they have become insurance societies with a fraternal feature rather than fraternal societies with an insurance feature. This development indirectly led, in many cases, to the undermining of the insurance feature itself. The original plan was a straight assessment plan, each member paying his share of the sum due to the relatives of the deceased. Such a system can be worked successfully with a cost very much lower than the rates charged by legal reserve companies for "old line" insurance, provided the membership remains from year to year of the same fairly low average age. In a labor union, for example, the tendency is for the older members to drop out of the organization and be replaced from year to year by young men, so that the average age and the average mortality remain unchanged. Assessment societies among the employees of corporations have operated very successfully, the tendency being here also for the older members to drop out of employment, so that the mortality is the relatively low mortality of people who are able to stay on the pay-roll.

In the fraternal insurance society, on the other hand, there is just the opposite tendency. The older the member gets, the less likely he is to drop out. As a result, the average age increases and the assessments grow heavier. As the assessments grow heavier, it becomes more difficult to secure young members, the younger men finding it more advantageous to go into newer societies with a lower assessment rate. As soon as the younger members stop coming in, the death of the organization, so far as its insurance features are concerned, becomes merely a matter of time. As each member dies, a larger assessment on the remaining members is necessary until, if the plan were carried through to the end, the last surviving member would have to pay the entire face of the policy of the next to the last member, and would then be left himself without insurance. Long before this contingency arises, however, assessment orders cease to function.

As the weakness of assessment insurance became apparent in the eighties and early nineties, the stronger fraternal orders shifted from the straight assessment plan to the graded assessment, a plan under which the assessment varies with the age of the member at entrance. Such a plan is theoretically workable, but in practice has not proved much more stable than the original flat assessment, for the reason that the assessments have not been large enough to provide adequate reserves and the lack of reserves has made it necessary to increase the number of assessments as the orders grow older, so that the same tendency for younger men to drop out and older men to stay in has appeared.

Since about 1910, the weakness of the ordinary type of fraternal insurance without adequate reserves has become so apparent that there has been a general movement to reorganize the fraternals on a "legal reserve" basis. The reorganization has involved the adoption by the fraternal companies of the fundamental actuarial principles, which we have seen above applied to ordinary commercial insurance. A fully reorganized fraternal society with adequate reserves differs from an "old line" company only in the following respects:

First, the fraternal companies use their own mortality table, which shows a somewhat lower mortality and is probably considerably more accurate than that used by the old line companies.

Second, the interest allowance is figured in some cases at 4 per cent.

Third, the government of a fraternal order is much more democratic than that of an old line company, even though the latter be mutual in character.

A considerable proportion of the members take some part, as a rule, in shaping the policies of the order. From the local unit, the lodge, delegates are sent to district, state, and national conventions, and important matters of policy are settled directly by these national conventions. Fraternal newspapers do much to create an effective public opinion among the members.

Fourth, the expense loading in the premiums is very low, though not as low as in a few of the old line companies. The actual expenses of the fraternal organization are almost invariably lower. This is partly because, in line with democratic precedent, it is their custom to pay relatively small salaries to their officers, and partly because the fraternal features have enabled them to keep their selling costs very low, a large part of their publicity being secured by the unpaid work of the membership.

In the early history of the fraternal orders there were no paid agents at all, but more recently there has arisen a system whereby "deputies" are paid small commissions to visit the local lodges and put on campaigns for new members. Their commissions, however, can be kept relatively small because, whereas the agent for an old line company has to find his own prospects and close his own sales, the fraternal deputy operates by stirring up the enthusiasm of the members and getting them to do much of the work, often through the medium of contests between neighboring lodges, or between picked teams in the same lodge.

Fifth, fraternal insurance certificates carry, as a rule, no cash surrender value and no loan value.

Sixth, a fraternal insurance certificate is not a contract whereby the order promises to furnish a given amount of insurance for a stipulated sum. The rates are always subject to readjustment by action of the order, and the amounts payable may be scaled down in case the order is unable to pay the full amount. Hence, it is almost impossible for a fraternal order to become technically bankrupt. Its liabilities consist only of its matured claims.

Seventh, the beneficiary has no legal equity in a contract of fraternal insurance. The insured can change the beneficiary at any time, although as a rule he cannot insure in favor of anyone except a dependent. The beneficiary cannot sell, assign, or transfer his claim prior to the death of the insured, because he has no legal claim to transfer, nor can a legal equity be created by the payment of premiums by the beneficiary.

Fraternal insurance has been looked upon with disfavor by most insurance authorities in this country, chiefly because of the unsound actuarial practices with which it has so frequently been associated. Nevertheless, it has rendered a very large service and in the author's opinion is worthy of a better rating than it generally gets. Fraternal insurance frequently gets a "black eye" in a community, because of the experience of members who after paying insurance for twenty-five or thirty years and becoming too old to secure insurance elsewhere, and after having their rates raised to two or four times their previous levels, have been compelled to drop their policies. What is overlooked in these cases is that the individuals in question have really had very cheap protection during the productive period of their lives, and if they had bought the insurance as term insurance, would have had no reason to be dissatisfied with their bargains. An individual who gets less than he bargained for, even though he gets as much as he paid for, is likely to express discontent, and this has very frequently been the situation of the buyer of fraternal insurance.

The history of the fraternal movement in this country can never be understood if it is viewed merely as a phase of the history of life insurance. It is a part of the great social democratic movement of the late nineteenth century of which the Greenbackers, the Farmers Alliance, the Populist party, the Free Silver movement, the United States Grain Growers, Incorporated, and the Non-Partisan League are more conspicuous manifestations. The fraternal insurance enthusiast of the eighties and nineties was an apostle of freedom, an advocate of the rights of the downtrodden masses against the greedy barons of Wall Street. The enthusiasm with which the fraternal organizers of that early day denounced the practices of the old line life insurance companies amounted almost to a religious faith. In the thought of these apostles, mortality tables, compound interest calculations, legal reserves, were implements of darkness, designed to separate the trusting citizen from his money and place it at the disposal of the stock manipulators and trust magnates of the East. As these devices have become better understood, the ardor of the crusaders for their abolition has waned.

In any evaluation of fraternal insurance, the value of the social features must not be overlooked. As noted above, fraternal insurance has been sold at a low figure because, among other reasons, the membership as individuals have carried the selling costs. This method of propagating the order has been possible only because the

local lodge and, to a less extent, the larger organization, have supplied a real social need.

In every small community in the country, particularly before the advent of the "movie," the lodge furnished for many men the only excuse for staying away from home. The ritual of the order has often been elaborate; its mastery has supplied a stimulating exercise, and the opportunity for a genuine intellectual triumph, while the holding of office in a fraternal order has furnished an opportunity for self-expression and an object of ambition. The opportunity to wear a resplendent uniform, to appear in pomp at the funeral of a deceased brother, the winning of a banner for surpassing neighboring lodges in the percentage of members who appear in procession at an annual county rally, and the gaining of a free oyster supper by beating a rival team in a contest in securing new members—all these activities minister to genuine human wants, and because this is true the orders have been able to propagate themselves without expensive selling organizations and to furnish insurance at a minimum cost.

Life annuities.—The life annuity is a contract designed to afford protection against the hazard of the individuals' outliving their productive capacity and becoming a burden upon the community. In many respects this type of contract is exactly the reverse of the insurance contract. Just as the insurance policy insures against the financial loss due to premature death, the annuity policy insures against loss due to prolongation of one's existence beyond his earning period. Insurance policies are usually paid for in annual instalments and mature in one lump sum, while the annuity is paid for in a lump sum and matures in a series of annual instalments. No medical examination is necessary for an annuity, as the only adverse selection, from the company's standpoint, is that arising from the tendency of persons who anticipate long life to purchase annuities, rather than persons who know themselves to be in doubtful health. If it were feasible, it would be logical to establish medical selection to eliminate the abnormally good risks, but abnormalities in the direction of a tendency to excessive length of life are not readily identified. The inaccuracy of the mortality table to which reference was made on page 249, which works in favor of the company in ordinary life insurance, would work against it in writing annuities, hence a separate mortality table is used for this purpose.

The computation of annuity premiums is similar to the computation of insurance premiums and needs no extended discussion. The

present worth of the sums to be paid to the various members of a typical group, as shown by the mortality table, is divided by the number of individuals in the group, to get the net single premium for the policy, and loading is then added just as in the case of life insurance. The uses and the characteristic features of life annuities are brought out with such fulness in the following account that little further discussion is necessary:

The primary function of the life annuity is to insure that a given sum of money will produce a life income larger in amount than could be safely secured through the channels of ordinary investment. The regular life annuity contract is a promise to pay, in consideration of a single cash sum, a fixed amount periodically during the lifetime of a designated person, called the annuitant. Annuities in practice are paid yearly, half-yearly, quarterly or monthly.

The correct method of computing annuity premiums is essentially as follows: The mortality table, upon which the computation is based, consists fundamentally of a series of numbers, showing how many persons out of a given number alive at the youngest age in the table, survive to each age throughout the possible range of life. Given, therefore, a large group of persons all of the same age, the mortality table renders it possible to forecast how many of the group will be alive one year hence, two years hence, three years hence, and so on until all of the members of the group have passed away. If, therefore, a promise should be made to pay a yearly annuity of a dollar to each member of the original group, it could be foretold how much would have to be paid at the end of the first year to those surviving at that time, how much would have to be paid at the end of the second year and at the end of the third year, and so on throughout the number of years covering the possible span of life of any of the members of the group. This series of payments may be compared to a serial bond issue maturing in definite amount throughout a period of years. And just as the banking house computes the present value of the principal payments under the serial bond issue, so the actuary computes the present value of the series of annuity payments that will be made to the members of the annuity group. Dividing the present value of the complete series of future annuity payments, by the original number of members of the group, he arrives at the true present value of the life annuity on the basis of the mortality table employed and of the rate of interest assumed in determining the present value of the future payments.[1]

A casual inspection of the table on page 278 explains at once why it is that few annuities are sold at the younger ages. The percentage return at

[1] In practice, this extended method of computation is not actually required, since mathematical short cuts have been developed which greatly facilitate the actuarial calculation. The final results of the short method, however, are identical with those obtained by the extended process described.

these ages is not sufficiently in excess of the return upon funds invested through the regular channels to induce prospective annuitants to hazard the loss of a considerable portion of their principal by investing in an annuity. At the older ages, however, where the return exceeds say 8 per cent, the annuity makes its greatest appeal. In no other manner can a sum of money be invested to yield an absolutely certain life income of so large an amount.

TABLE SHOWING COMPARATIVE RETURNS ON MALE AND FEMALE ANNUITIES, AVERAGE OF 15 AMERICAN COMPANIES

Age		Male		Female	
		15 American Companies	15 British Companies	15 American Companies	15 British Companies
40	Lowest	5.40	5.41	5.29	5.21
	Average	*5.83%*	*5.88%*	*5.53%*	*5.56%*
	Highest	6.29	6.21	6.08	5.85
50	Lowest	6.57	6.61	6.22	6.13
	Average	*7.03%*	*7.14%*	*6.51%*	*6.59%*
	Highest	7.58	7.46	7.07	6.82
60	Lowest	8.55	8.75	7.89	7.78
	Average	*9.21%*	*9.41%*	*8.31%*	*8.36%*
	Highest	9.87	9.63	8.83	8.58
70	Lowest	11.91	12.80	11.39	11.33
	Average	*13.27%*	*13.73%*	*11.94%*	*12.14%*
	Highest	13.85	14.00	12.47	12.35
80	Lowest	17.76	......	16.57	......
	Average	*19.35%*	......	*17.60%*	......
	Highest	22.47	......	20.20	......

Annuities have reached their greatest development in older, longer established countries where there are large accumulations of capital and where interest rates are relatively low. Pioneer countries, where available capital is urgently needed for development of their resources and where the return upon investments is correspondingly large, know little of annuities. For this reason, America has had less experience with annuities than has Great Britain.

An important, but less well known, application of the annuity is to the problem of liberating for the urgent needs of the present capital that would otherwise be held invested because of the income it produces. An excellent example taken from the literature of a company that has made a specialty of the annuity business will serve to make this application clear:

A father, 69 years of age, had two sons, one a lawyer, age 27, and the other a doctor, age 29. Each was struggling to build up a practice in London. The father realized that his boys were then more in need of financial assistance than they were likely to be in later years after he had passed away. His income, about £400 a year, derived from investment of £12,000, was just sufficient to meet his own requirements. If he gave his sons any of the capital he reduced his own income. He solved the

difficulty by purchasing an annuity of £400 payable £100 a quarter. This cost him about £3,184 of his capital. The balance of £8,816 he equally divided between his sons, enabling the doctor to move to Harley Street, and the lawyer to secure a remunerative partnership.

The deferred annuity.—An annuity of much value is the deferred annuity. The first payment under this annuity is deferred for a period of years, say to the end of the annuitant's income-earning period. It may be purchased by a single premium or by a series of premiums. Upon the death of the annuitant the contract terminates. For an additional premium, provision may be made for the return, upon the death of the annuitant, of such part of the premiums as may not have been returned in annuity payments.

The deferred annuity is particularly adapted to men and women, without present or prospective dependents, who desire to provide during their income-earning period against possible dependency in old age. There is no more economical manner in which this provision may be made; though it is essential if there be dependents, that the deferred annuity should be supplemented by additional provision for their support. To meet this latter contingency, contracts involving both the annuity principle and the insurance principle have been developed.

The reversionary annuity.—One of these combination contracts developed to meet the demand for a method of protecting a dependent in the event of the death of the breadwinner, is the reversionary annuity which provides for the payment of a life annuity to a beneficiary commencing upon the death of a designated person known as the insured.

For example, a son may employ the reversionary annuity to insure a life income to his mother, should she outlive him. The contract may be paid for by a single premium or by a limited number of annual premiums, continuing, however, only so long as the mother and son both live. Upon the death of the son, the annuity payments to the mother commence. Should the mother die before the son, the contract terminates and all premiums paid are forfeited.

Where there is a considerable difference in the ages of the insured and beneficiary, the reversionary annuity renders its greatest service, and under these circumstances it is well adapted to the protection of the older of the two lives in the event of the death of the younger. Where the ages are more nearly equal, however, or where the beneficiary is younger than the insured, the reversionary annuity possesses many weaknesses.

The monthly income policy.—A modified form of the same contract is the monthly income policy. The monthly income policy remedies in large measure the weakness discovered in the reversionary annuity. In the first place, the income payable upon the death of the insured under a monthly income policy is payable monthly for a fixed number of years certain and thereafter during the remaining lifetime of the beneficiary. By the phrase "fixed number of years certain" it is meant that when the

income becomes payable by the death of the insured, the income during the so-called "period certain" is guaranteed irrespective of the life of the beneficiary. On this account, it is possible to change, *ad libitum*, the beneficiary who shall receive the "income certain"; and as the "period certain" is frequently twenty years, the privilege is a valuable one. The income payable after the expiration of the period certain is usually payable only during the lifetime of the beneficiary originally designated.

Immense improvement of the income policy upon the reversionary annuity is that it protects any children who may be living at the death of the insured. The fact that the income is payable certainly, for say twenty years, insures that the children will receive an income until they have acquired an education and have become self-supporting.

Furthermore, the monthly income policy possesses a cash surrender value based upon insurance value of the income payable during the period certain; whereas the reversionary annuity makes no provision for cash surrender.

The most complete form of monthly income policy adds to the one just described, a further provision under which the income commences upon the insured's living a specified number of years, or say to age sixty or sixty-five. In this event, the income is paid to the insured during his remaining lifetime, and after his death to the beneficiary, with a guaranty that payments for a period certain will be made if both the insured and the beneficiary die during the period. If the insured dies before the date when his income is due to commence, the income is paid to the beneficiary for life, with the guaranty of income for a period certain. This contract is adapted to furnish complete protection to a husband and wife, and also protection, during minority, to any children living at the death of the insured or at the time the income to the insured commences.[1]

Disability clauses in life insurance policies present innumerable differences of detail, but fall into two general types. Some provide simply for the cessation of premiums during the continuance of total disability, prior to a specified age, usually sixty or sixty-five. Such a provision may be very useful in enabling the insured to keep his policy in force at a time when he is unable to earn anything, but its benefits are of very small financial significance, as the average length of life of disabled persons below age sixty, as generally estimated, is less than a year and a half.

The second type of disability clause provides for the payment of benefits under the policy, usually in instalments, in the event of total and permanent disability. A great variety of clauses of this general type are offered. Some simply provide for the payment of the face

[1] Adapted by permission from M. A. Linton, "Life Annuities," *Annals of the American Academy of Political and Social Science*, LXX (March, 1917), 20–35.

of the policy, with interest, in annual or more frequent instalments over a period of twenty years, from beginning of total disability, without regard to the time of death of the insured. Others provide for payment of such instalments during the period of disability, and the payment at death of any balance remaining unpaid at that time. Still others provide for payment of the instalments during continuance of disability, and also the payment of the full amount of the insurance at death. The rates also vary a great deal, as there are no generally accepted tables indicating the extent of the risk insured against under these clauses. A number of companies are using their own experience, which has not been published.

Disability clauses of the first type, those providing only for cessation of premiums, cost very little (twelve cents per thousand dollars per year on a thirty-year term policy at age thirty-five, according to one company's rates), but the clauses which provide for the payment of disability benefits of a substantial character are relatively expensive.

Logically, every contract of life insurance should contain a clause providing for the payment of the face value, either in cash or in instalments, in the event of permanent total disability. The contingency insured against in a life policy is the loss of income due to death. The loss incurred in the event of total disability is of the same character as that sustained in the event of death, and is even greater in amount, for the cost of support of the insured individual, which ceases at death, continues and may even increase at disability. In the present unstandardized state of the disability clause, however, the disability clause requires very careful scrutiny in order that the insured may be assured that he is getting value equivalent to the cost.[1]

War risk insurance.—One of the most interesting experiments in recent life insurance history is the establishment of the War Risk Bureau under the federal government to furnish life insurance for soldiers and sailors during the Great War. The idea underlying the establishment of this type of insurance was that the soldier or sailor should be given the opportunity to secure protection for his dependents against the risk of death during military service, or the years following, on terms which would throw upon the government the cost of protection against hazards due to the war, while the individual paid

[1] Leading discussions of disability clauses are Bruce D. Mudgett's two articles, "Total Disability Provision in American Life Insurance Contracts," *Annals of the American Academy of Political and Social Science*, Vol. LIX (May, 1915), and "Five Years' Progress in Disability Protection," *ibid.*, Vol. LXX (March, 1917).

the cost of insuring him against the ordinary hazards of peace. This was accomplished through the creation of the War Risk Bureau, which undertook to write life insurance on the entire military and naval force. The policies as originally written were five-year term policies, and the premiums were net premiums without loading, the entire expense of administration being absorbed by the government.

As the mortality during the war was very high and was expected to be still higher, there was no expectation that the premiums would be adequate to meet the losses. The government spent a large amount of money in urging those eligible to take advantage of the insurance offered, and was successful in writing more than four million policies. As soon as the armistice was signed, however, the greater proportion of the policyholders ceased the payment of premiums. In 1919 it was reported that less than a million policyholders were keeping up their payments. In order to check the decline the Secretary of the Treasury issued a ruling permitting discharged soldiers, sailors, and marines who had dropped or canceled their policies to reinstate within eighteen months after discharge without medical examination and without the payment of back premiums, except one month's premium to cover the period of grace when the policy was in force. The only limitation on the privilege was that the applicant should be in as good health as he was at the date of his discharge. In spite of this liberality the decrease in number of policyholders continued so that only about 550,000 policies are now in force.

As a very large proportion of the holders of these policies were young men without dependents, who in the normal course of events would not have been in the market for insurance for some time and would not have bought $10,000 policies for many years, it is not strange that the lapse rate has been very high. The tendency to discontinue payment of premiums was aggravated by dissatisfaction over the large number of errors made by the Bureau and the extreme slowness with which it worked. The necessity of converting the term policies into higher-priced policies also, in all probability, contributed to this tendency to lapse, as did the very liberal policy of reinstatement.

The optional conversion privilege offered a choice of whole life policies, twenty- or thirty-year limited payment or endowment policies, and endowments maturing at age sixty-two.

Most of the liberal policy features developed by legislation or by the competition of life insurance companies in recent years were included—high loan and surrender values, option of monthly, quar-

terly, or annual premium payments, exemption of proceeds from taxation and from the claims of creditors, and incontestability from date of issuance, the last provision one which seems to offer an unnecessary incentive to fraud. The disability clause is extremely liberal, providing for payment of $5.75 per thousand dollars insurance monthly for the period of total disability, or for 240 months in case of death before the expiration of that period. Similar clauses in private insurance contracts usually cover only disability incurred before a specified age, sixty, sixty-five, or seventy years. In view of the very large proportion of aged persons who incur disability, this feature is of considerable importance.

With regard to the success of the government's experience with life insurance, opinions will differ for many years. In the author's judgment, the fundamental principle on which the cost was divided between the insured and the government was thoroughly sound, and the object aimed at, namely, the avoidance of the pressure for pensions for dependents in years to come, was an eminently worthy object. In view, however, of the progressive liberalization of the policy and the pressure for other types of financial assistance to veterans of the war, it appears extremely doubtful whether the insurance will not prove to be an addition to, instead of a substitute for, our traditional pension legislation.

The wisdom of handling the insurance through a government bureau is more debatable. At the time the experiment was undertaken no life insurance company was in a position to handle the volume of business created by the war emergency, and few companies would have cared to risk the loss of good will resultant from disrupting their organizations in an attempt to do so. As the number of the insured grows smaller, however, the necessity for handling this program through a government bureau grows less. From a purely business standpoint, it would probably be desirable to transfer the contracts in time to a syndicate of insurance companies if it were politically feasible to do so. No such action appears probable, however.

The chief criticisms which may fairly be leveled at the insurance administration have to do, not with the routine clerical labor but with matters of policy. In the first place, the selling methods which have at times been used by the Bureau have been the subject of well-merited criticism. For instance, in 1918, a circular issued by the Bureau set forth the claim that the government policy offered insurance at a rate 30 per cent below that offered by any commercial company,

a figure which was apparently arrived at by treating a policy for $10,000 payable in monthly instalments over a period of twenty years as the equivalent of a policy for $10,000 payable in cash, without regard for the item of interest.

The exclusion of term insurance from the list of policies to be issued after five years from the close of the war, is also hard to justify. Term policies are not popular, the candidate for insurance being apt to infer that if he lives out the term of the contract he has given something for nothing. The hostility of most insurance companies to term insurance has encouraged this attitude. The War Risk Bureau had an opportunity to do an excellent piece of educational work on this point, but has chosen instead to adopt the traditional viewpoint, treating the term policy as a makeshift and urging early conversion into the more "permanent" types of investment policy.

As already noted, the feature of incontestability from date of issuance seems to be unnecessarily liberal, and to offer incentive to fraud. The complete exemption of the proceeds of policies from all claims of creditors enlarges upon a bad custom. Such exemption is very general, so far as life policies payable to dependents are concerned; the government policy offers such protection even to the proceeds of endowment policies. There is little justification for such exemption in any case, and least in the case of endowments.

Sweeping statements by the Bureau that the government will never turn this business over to private companies, while they will probably be justified by the results, do not seem to be justified by the present legal situation. There is no legal difficulty in the way of any future Congress abolishing the Bureau, and either turning the insurance over to private companies or canceling the policies and paying the policyholders the cash surrender value of their insurance. Such an action seems at the present time politically impossible, but in view of the startling changes of political outlook, which frequently take place in a few years, the positive statements to the contrary by the Bureau's representatives are hardly justified.

From the standpoint of the insured, the war risk policy is decidedly attractive. In the first place, it offers a standard policy at net table rates, the lowest rates at which non-participating insurance can be offered by a legal reserve company. Second, the policy, as already noted, contains a very liberal disability clause, for which no allowance is made in figuring the premium. This feature makes the policy the cheapest insurance of its type in the market. Third, the policy is

a participating policy, sold at non-participating rates. To be sure, this feature does not, on the face of things, appear to be of much importance, for of the three chief sources of dividends on insurance policies, only one appears to be available in connection with the war risk policy. There can be no savings from expense loading, for there is no loading. Mortality savings appear very remote, for the experience during the war was very unfavorable, and the present list of policyholders contains a high proportion of disabled veterans, among whom the mortality must be excessive. There remains the possibility of gains from investments. The statement of assets and liabilities as of December 31, 1921, showed total assets in the government life insurance fund, amounting to $45,515,362.12, over $42,000,000 of which was invested in United States bonds (book value). Assuming earnings of $4\frac{1}{4}$ per cent on the entire body of assets, the gross investment earnings would be less than $2,000,000, of which amount over $1,000,000 is required for interest accumulation on the policy reserve of $29,387,889, leaving less than $1,000,000 to offset excess mortality and provide for dividends. Yet $1,750,000 was shown in the same statement as reserved for dividend payments during 1922. In the absence of definite information as to the way in which earnings have been figured, it is difficult to resist the conclusion that such distributions as have been made were based rather on political expediency than on bona fide earnings.[1]

This last point suggests a fourth advantage of a war risk policy, from the standpoint of the holder, namely its speculative value, which arises from the uncertainty which exists concerning future changes in the rights and obligations of the policyholder. That future legislation will reduce the benefits to be derived from the ownership of these policies seems highly improbable, while there is a considerable chance that changes may be made which will reduce the premium payments

[1] The dividends paid in 1922 ranged from $1.53 to $2.04 per $1,000 of insurance on ordinary life policies, and from $1.68 to $213 on twenty-year endowments. Inquiry from the War Risk Bureau concerning the source of dividend earnings has elicited only the information that "the fund from which dividends on converted policies may be apportioned is accumulated from two sources: savings due to deferred mortality and excess interest earnings." On the other hand, a pamphlet issued by the War Risk Bureau in 1920 stated that more than $1,000,000,000 in claims had been allowed, and only about $300,000,000 had been collected in premiums. *New and Liberal Features of War Risk Insurance*, p. 7. It is of course possible that the 1922 dividends were based on 1921 mortality experience, without consideration of the accumulated excess mortality.

or increase the benefits. Under our system of government, the odds in such a speculation are all in favor of the holder. He has a hand in the treasury, and the longer he holds his policy, and the more generally his fellows surrender theirs, the more valuable does his position become. From a purely financial point of view, therefore, it seems clear that any holder of a war risk policy who now has, or expects ever to have, need of insurance, has much to gain and little to lose by keeping his policy in force.

QUESTIONS

1. Explain the meaning of the following terms: adverse selection, benefit of selection, reserve, loading.
2. What are the advantages of each of the leading types of "old line" life insurance policy?
3. Why should the cost of insurance in the later years of life, under the natural premium plan, become prohibitive? Is insurance bought more cheaply by paying for it years in advance?
4. Calculate the value of your own life for insurance purposes, making reasonable assumptions concerning your prospective earnings and personal expenditures.
5. At what time of life is the maximum amount of insurance necessary in order to cover the amount at risk?
6. How much insurance is it good business policy to keep in force on the life of a retired business man? Does the state of his health at the time of his retirement have any bearing on the answer?
7. An unmarried woman, 35 years of age, a teacher, is the sole support of her mother, aged 73. She is advised to take out $4,000 of twenty-year term insurance, and $4,000 of twenty-payment life insurance, in order to combine protection for her mother with provision for her own old age. Could you give her better advice? (Her salary is $1,750 per annum).
8. A and B are brothers, sons of C, a widower. C at age 65 notifies A and B that he will no longer keep up premium payments on two policies in their favor on his life, one of which is an ordinary life policy in a legal-reserve company, taken out at age 35, the other a beneficial certificate in a fraternal order, taken out at age 28. Both the insurance company and the fraternal order bear good reputations. C is in excellent health. A and B are in no way dependent on C's income, which is chiefly derived from investments, though he earns enough to pay his living expenses from the practice of a profession. The rate on the fraternal certificate is $9.00 per thousand, on the old-line policy $21.00. A and B decide to keep up the payments on both contracts. Is this decision wise (*a*) in the case of the legal reserve policy? (*b*) in the case of the fraternal benefit certificate?

9. In the case above cited, three years after the brothers assume responsibility for the premium payments, A proposes to B to sell his interest in the fraternal policy. C is still in good health. The following bargain is struck: B is made sole beneficiary. B is to pay A the present worth of half the face of the policy, discounted at an agreed rate of interest for the term of C's life expectancy as shown by the American Experience Mortality Table, less the present worth of the premiums on the half policy which would fall due within said life expectancy.

Is this a fair bargain? If not, what other factors should be taken account of to determine a fair price for A's interest?

CHAPTER XIV

FIRE INSURANCE

Of the various types of property insurance, fire insurance is much the most important from the standpoint of the amount of insurance written and the number of individuals protected. The usual types of fire insurance transaction will therefore be discussed in some detail, leaving other kinds of property insurance to be dealt with more briefly in chapter xv, chiefly by comparison of their practice with that of fire insurance.

The subject-matter of this chapter will be discussed in accordance with the following outline:

I. The risk insured

II. Policy contracts

III. Special provisions in insurance contracts
   1. The mortgage clause
   2. Coinsurance
   3. Three-quarter loss clauses; three-quarter value clauses
   4. Use and occupancy, profit, and rent insurance.

IV. Company organization
   1. Stock companies
   2. Mutual companies
   3. Lloyds associations
   4. Reciprocal insurance

V. Rates and rate-making
   1. Methods of rating: judgment, schedule, experience rating
   2. Rate schedules: the Universal Mercantile; the Dean

I. THE RISK INSURED

The risk covered by fire insurance, the hazard of loss from the destruction of property by accidental or incendiary fire, is one of the most serious risks with which business has to contend. The extremely destructive character of accidental fires, the frequency with which they occur, the irregularity in the incidence of the loss, and the constant change in the character of the hazard combine to make the problem of elimination of fire risk one of the most difficult in the whole field of business. The advance of civilization has brought about a great improvement in the techniques of fire prevention and the fight-

ing of fires, but it has also brought in innumerable new hazards. Each change in the methods of heating, lighting, building, in the kind of power used in manufacture, in the methods of transportation employed, in short, in almost any phase of the industrial and commercial life, brings new hazards. The substitution of electric lighting for kerosene lamps reduced the number of fires, but it resulted in a larger proportion of very destructive fires, because fires resulting from faulty wiring are more likely to remain undiscovered till they have gained headway. Railway transportation brought in the hazard of fires from sparks; automobile transportation is bringing new hazards from the storage of fuel. The transition of the United States from a rural to an urban civilization made possible a great improvement in fire protection and encouraged more substantial construction, but led to a concentration of risks. The net result was, on the one hand, to bring about a great increase in the proportion of trifling fires, and, on the other hand, to increase the hazard of conflagration. The fire loss fluctuates widely from year to year and from community to community, some of its vagaries being quite inexplicable.

There is a striking parallel between the fire loss and the cost of depreciation. Both the deterioration due to weathering and the loss due to fire are inevitable costs of doing business. Both involve the ultimate destruction of the capital exposed to them and hence require the occasional investment of large sums for replacement purposes. The most important difference between them is that depreciation goes on at a rate sufficiently uniform to enable a fairly accurate calculation of the time at which the replacement will be necessary while fire loss is highly irregular. Hence, it is more practicable to make provision for depreciation through setting aside annually a designated sum out of earnings. If the amount of a corporation's property exposed to fire is great enough and the sweep of time involved in the calculation extensive enough, it is possible to make provision for destruction by fire in the same way. The number of risks and the range of time involved in most men's calculations, however, are not great enough to make such replacement practical, hence the payment of insurance by numerous firms into a common fund is necessary in order to equalize the burden. Like the depreciation charge, the insurance premium is an annual contribution out of the gross income for the replacement of wasting capital, and through the medium of insurance, or through the diversification which is occasionally possible, an analogous degree of regularity in its incidence is secured.

The principal elements which make up the fire hazard on any property are the construction, the occupancy, the protection, the exposure, and the moral hazards. Construction and occupancy are self-explanatory. The chief points of importance in connection with construction are the combustibility of materials and the readiness with which flames can spread from one part of the building to another. Occupancy, so far as the hazard of the building is concerned, is chiefly important from the standpoint of the tendency of the processes carried on to cause fires to originate, though the tendency of the contents to transmit fire readily is also an important factor. In insuring the contents of a building, attention must also be given to a third factor, the extent to which the contents are susceptible to damage either from fire or from smoke, water, dirt, and exposure incident to removal on account of fire.

"Protection" is the term applied to the facilities available for stopping the progress of fires. It includes both the public fire-fighting service and the provision made in connection with the property itself, such as automatic sprinklers, fire pails, services of watchmen, etc.

The term "exposure" refers to the risk of damage through fire originating outside. Nearly 30 per cent of fires are due to exposure; hence careful attention must be given to such factors as distance from neighboring buildings, location of windows, character of processes carried on in adjacent buildings, and similar sources of risk.

One phase of the exposure hazard is of so much importance as to deserve special discussion. This is the so-called conflagration hazard, the risk of a fire so serious as to outrun the fire fighting facilities of a city and burn itself out without effective opposition. The distribution of the loss due to conflagrations constitutes one of the most difficult problems in insurance policy. Conflagrations do not occur with sufficient frequency or regularity to make possible an accurate estimate of the amount of loss which may be anticipated on account of them. The period of time required to determine the statistical frequency of so infrequent a phenomenon as a two million dollar fire is so great that before sufficient data can be assembled conditions change and the earlier experience becomes valueless. Before every great conflagration in recent years, it has been argued that the improvements in fire protection and the regulation of building construction had so reduced the conflagration hazard of the larger cities as to make it negligible. During the past few years, comparative immunity has in fact been obtained, but it will be many years before it can safely be

said that experience has confirmed the conclusions of those who deny the continued significance of the conflagration hazard.

It is almost impossible to make satisfactory provision for meeting this kind of fire risk. Fire insurance rates, as a whole, are based on regional experience, and the experience of most sections of the country has not included a conflagration so recently that its effect shows in the tables of average losses. Sections which have had conflagrations, on the other hand, object to having their rates based on the heavy loss ratio which results from averaging in the conflagration losses with the minor losses which occur from year to year, arguing rightly that the fact of a conflagration's destroying the major part of a given city does not create a presumption of a heavier loss ratio in succeeding years for the whole state or other geographical subdivision in which the city happens to be located. Moreover, if rates were so adjusted as to take care of the full risk of loss due to conflagration hazard, and no conflagration occurred for many years, it would be difficult to prevent stockholders, buyers of insurance, and taxing bodies from drawing the conclusion that the large excess revenues resulting from the high rates were a profit available for distribution as dividends. The only way companies can protect themselves is to keep their risks so scattered that no single conflagration can wipe out their surpluses, then if heavy losses are incurred charge them to surplus as business losses. Usually, after a great conflagration, a number of companies go into bankruptcy, thereby throwing part of the loss on policyholders, and frequently rates are raised for a time to enable the surviving companies to recoup themselves. This is quite justifiable, so far as urban properties are concerned, but the increasing of rates on rural property, not subject to conflagration hazard, in order to take care of the losses due to a great conflagration, involves a real injustice.

The moral hazard includes both the danger of deliberate destruction of property, caused either by the owner, in order to collect insurance, or by others out of spite, and the hazard due to carelessness. The moral hazard is greater in fire insurance than in most kinds of insurance, because of the ease with which property can be burned, and the difficulty with which companies are able to protect themselves by preventing overinsurance. Only a small proportion of insured properties are inspected to guard against overinsurance at the time policies are taken out, and even where this is done there is great difficulty in precluding the later appearance of overinsurance through depreciation of buildings, price changes, decline of prosperity of the

community or of the individual concern, or changes in building or contents made by the owner. Hence, there is a constant temptation to policyholders to recoup their business losses or rid themselves of unsalable property by arson, and a still greater temptation to neglect precautions which would probably be taken if the fire hazard represented a real risk to the owners.

The importance of the moral hazard is easily exaggerated, however. Its importance does not consist in the number of fires which are caused through moral shortcomings, but rather in the necessity of constant watchfulness and effort to prevent an increase in their number. Unless nearly all the fires due to unknown causes (usually about 15 per cent of the total) are due to incendiarism, the proportion of losses due directly to moral hazard is relatively small.[1]

What risks are insurable? As was noted in chapter xiii, the theory of insurance is that the effect of the contract is to relieve the insured from the risk of financial loss due to the event insured against, and not to guarantee him a certain sum of money inthe event of certain things happening. In fire insurance this is known as the doctrine of indemnity. On account of the great moral hazard in this type of insurance, it is especially important that the insured be not given an opportunity to profit by the occurrence against which insurance is sought. The results of this situation are, first, a strict application of the requirement of insurable interest on the part of the insured; second, strict provision that overinsurance shall not create a claim for compensation in excess of the loss actually sustained, even in the event of total loss; third, the concept of insurance as a personal contract, designed to offset a given individual's personal risk, and not transferable except with the express permission of the insurer.

The doctrine of insurable interest means simply that the insured shall have an actual financial interest in the event insured against. If such interest exists, it is immaterial whether the insured is the actual owner of the property or not. Insurable interest includes those of mortgagees, tenants, agents, common carriers, warehousemen, contractors, receivers, and many others.[2]

If insurable interest does not exist the contract creates a speculation on the part of the insured. As has been noted previously, such

[1] About 10 per cent of fires are attributed to incendiarism. It is frequently stated that industrial depressions cause an increase in the fire loss, which is apparently due to the decline in value of property and the increased financial pressure. The statistics of fire losses afford little support for this line of reasoning, however.

[2] For detailed analysis see Huebner, *Property Insurance*, chap. iii.

a speculation is always unfavorable to the insured and favorable to the insurer, unless the insured either has knowledge superior to that of the insurer or has the power to control the outcome. In tornado insurance, the insurance companies can well afford to write insurance in unlimited amount, if their rates are properly adjusted and their risks are well scattered. But in fire insurance the insured often has superior knowledge of certain elements of risk and nearly always has some opportunity to exert control over the outcome; hence, it is extremely important that his interest in the policy be limited to the amount which he actually has at risk.

This limitation is regularly secured by the contractual stipulation that in the event of total loss only such amount shall be payable as represents the actual value at the time of the fire. In some states, however, this provision has been set aside by the enactment of what are known as valued policy laws. The effect of such a law is to require the insurance company, in case of a total loss, to pay the full amount of the policy, irrespective of the question whether the property was worth that much or not. Thus it puts the burden on the insurance company, in cases where overinsurance is claimed, to prove actual fraud instead of leaving open the easier defense of disputing the value of the property.

Such legislation is strongly opposed by insurance companies and by insurance authorities generally, on the ground that it is a deliberate encouragement to overinsurance and to the wilful destruction of property. Advocates of such legislation, on the other hand, contend that in the absence of a valued property law, insurance companies can collect premiums for excess insurance, keep the premiums in the cases where no loss occurs, and in cases where the property is actually destroyed, evade the payment of part of the face of the policy by raising the issue of overinsurance and refunding the excess premium.

There is a certain amount of force in this contention, but since no one is under obligation to take out more insurance than he has reason to think he can collect in the event of total loss, the insurance company has the better case. Valued policy laws, undoubtedly, increase the moral hazard, and do not carry with them sufficient compensating advantages to justify their enactment.

The third result of the concept of insurance as indemnity is to make it strictly a personal contract, by which is meant that the insurance company assumes responsibility only for the loss accruing to a designated individual or firm. Hence, in the event of a sale or other change

of interest on the part of the insured, the insurance never follows the property, and may be assigned only with the written consent of the insurer. Such provisions are especially necessary in types of insurance, like fire insurance, where the moral hazard is great, but their application is not limited to those particular types.

Who needs fire insurance? All who own property subject to damage by fire have a risk to carry, but not all such individuals can wisely cover this risk by insurance. As in all types of insurance, it is necessary that the insured group, as a whole, shall pay into the insuring organization more than they withdraw in payment of losses. The economic value of the institution arises from the two circumstances: first, that a single large loss is apt to be more disastrous than an equivalent amount lost in a series of small items, and second, that an unexpected loss is apt to be more serious in its effects than one which is known and planned for in advance.

The advisability of a given individual's carrying any sort of property insurance depends entirely upon the proportion between the probable amount of his loss, in case luck runs against him, and the total resources from which the loss, if it occurs, will have to be subtracted. This comparison reduces itself chiefly to a question of the extent to which one's resources are concentrated so as to be exposed to the hazard of a single disaster. It is not at all a question of the financial strength of the property owner, except in so far as greater financial strength increases the probability that one's resources will be scattered. A corporation which owns $1,000,000 worth of inflammable goods, all under a single roof, cannot afford to leave them uninsured any more, nor any less, than can an individual who has only $1,000 worth of goods, all under the same roof. In each case, the loss which is reasonably probable is sufficient to wipe out the capital and interrupt the course of business, causing, in addition to the direct damage a loss of good will and destruction of earning capacity. Even though, in a series of years, the amount paid in by the insured in premiums exceeds the amount which could have been lost by a single fire, the prevention of these indirect losses makes the transaction worth while. On the other hand, a corporation or individual having $100,000 worth of property scattered in a hundred separate lots, in different cities, has little need for fire insurance, unless some of the units exposed to a single possible fire are disproportionately large. The distribution of risk secured by such holdings is less complete than that secured by a company which insures thousands of separate properties, but the loss in any

year is not likely to equal many times the total amount of the premiums which would have to be paid to secure insurance. The fact that the loss from one fire will be small relative to the total worth of the business means that the company has the same sort of protection from indirect losses that a company with more concentrated resources would have to secure through insurance. Whenever the property owner can put in sufficient outside capital to replace his property without seriously upsetting his established plans of operation elsewhere, he can avoid the indirect losses at the point where the fire occurs just as well as though he replaced his capital by the investment of money coming from an insurance company. Thus, railway companies have no need to insure their smaller station buildings, though their large city terminals may advantageously be insured.

Corporations which practice self-insurance, as the practice of carrying one's own risk is called, should protect themselves against sudden calls for capital to replace fire losses by maintaining reserves in the form of marketable securities or other liquid assets which can be drawn upon for the purpose.

II. POLICY CONTRACTS

One outstanding difference between the situation in fire insurance and that in life insurance is the relative degree of standardization which has been attained. The legal reserve life insurance companies all use the same mortality tables and approximately the same interest rates, and the principal types of contract which are offered by one company are offered by nearly all. The effect of competition, however, has been to develop a large number of contracts differing from one another in relatively unimportant details. These details are then used as selling points to establish the superiority of one company's offerings over those of another. There is a constant stream of new types of disability clauses, double indemnity for accident, variant methods of treating the distribution of dividends, and variant methods of paying the proceeds of the policy. The elements with which the actuary deals are so few that the really important variations in the contract are not numerous, but the exercise of salemen's ingenuity has sufficed to create an appearance of wide diversity.

In fire insurance, on the other hand, although the experience of different companies has not been pooled so as to establish any satisfactory basis for standardizing the premium charge, the effect of competition has been just the opposite to its effect in life insurance,

namely, to bring about a very high degree of standardization, both of the terms of the policy contract and of the premiums charged. To some extent this standardization has been the result of legislation requiring the use of standard types of policy, but in general the causal influence has operated in the opposite direction. That is, it has been the initiative of the insurance companies which has led to the uniformity in legislation rather than the legislation which has brought the companies into line. Such diversity in contracts as exists at the present time is due more to the divergence of ideas among legislators and insurance commissioners in different states than it is to a difference in the attitude of insurers themselves.

This difference in the effect of competition on the form of the contract is apparently due to a difference in the attitude of most purchasers of insurances toward the two types of contract. Fire insurance is regarded as a necessity by most property owners, and competition between companies consists largely of a competition between agents to get to the prospective customer first. In life insurance, on the other hand, there is very little spontaneous consumer demand, and insurance is sold not so much by getting to the consumer first as by holding on to him longest. Hence, the possession of a special feature which can be played up as a talking point in making the payment is desirable from the standpoint of the life insurance agent, whose job is primarily one of creating interest, while in the case of fire insurance a divergence of the individual policy from that usually written would merely create additional work for the salesmen in explaining the variation to a customer who is ready to buy before he is approached.

Whatever the explanation, the tendency toward extreme standardization in the fire insurance contract is very clear. The policy most frequently written is the New York standard policy, which has been adopted without material modification in most states. The principal provisions of this policy may be summarized as follows:

1. As previously noted, the policy insures only against damage sustained by the insured or his legal representatives.

2. The policy covers loss sustained by fire and by removal of goods from premises endangered by fire, but does not cover currency, deeds, accounts, money, notes, or securities, nor does it cover damages caused directly or indirectly by invasion, insurrection, riot, and similar disturbances.

3. The policy is rendered void by the placing of other insurance on the same property without the consent of the insurer. This provision is not intended to discourage the distribution of insurance between

different insurers, but simply to enable the insuring companies to keep track of the amount of insurance outstanding. Permission to place other insurance is always given as a matter of course unless its effect is to increase the total amount beyond what the insurers consider conservative limits.

4. The insurance company is relieved from liability during the continuance of certain conditions which operate to increase the hazard, including alterations of the building (requiring more than fifteen days for completion), storage of certain inflammable compounds, operation of factory buildings at night, vacancy of building beyond ten days, and, in general, any condition known to the insured which increases the hazard beyond that contemplated when the amount of premium was agreed upon.

5. Both parties to the contract reserve the right of cancellation at will. In case the contract is canceled by the insurance company the insured is entitled to return of the full proportion of premium not yet earned, but in case of cancellation by the insured he is entitled only to the difference between the premium he has paid and the "short rate" for the period during which protection has been enjoyed.

6. In case property at the time of damage is covered by more than one policy, the loss is divided among the insurers in proportion to their total liability. In case some of the insurers are unable to meet their liability, which is likely to be the case in the event of conflagration, the other insurers are liable only for their proportion of the total, not simply the collectible insurance.

7. The insurance company is entitled to an assignment of any rights of recovery the insured may possess against any party for loss or damage, to the extent that payment is made by the company. This is known as subrogation.

8. Detailed provisions, which need not be summarized here, establish the requirements in case of loss, including notice, proof of loss, protection of salvaged property, appraisal, method of payment, etc. The company reserves the option, rarely used, of replacing the property instead of paying the loss, but the insured does not have the option of abandoning the property to the company and claiming a total loss.

The indorsement which fits the standard policy to the conditions of a particular risk is known as the rider form. This indorsement includes the name of the insured, the character of his interest in the property, and the description of the property insured. These forms are standardized, to a large extent, and serve as the basis

of a classification of policies according to the character of the coverage. A *specific* policy covers a definite item or group of items in a definite place. A *general* policy covers different kinds of property in a specific place, the amount of each being specified. A *blanket* policy covers different kinds of property or property in different places under one item, the amount of each remaining unspecified. A *distribution* clause in a blanket policy provides that in the case of two or more lots not subject to the same hazard the insurance shall apply to each lot in the proportion that its value bears to the value of the entire group of items covered. A *floating* policy follows goods in transit. An *excess floater* indemnifies the owner to the extent that specific insurance carried may at the time of the loss be insufficient to cover the amount of the loss. It may apply at one or at several locations.

III. SPECIAL PROVISIONS IN INSURANCE CONTRACTS

To the standard policy, standardized riders may be attached covering such matters as the protection of the mortgagee, protection against gas explosions, permission to store kerosene, gasoline, and other inflammable commodities upon the property in excess of the amount permitted by the standard policy, vacancy permits, etc., and special modifications may be made to take care of matters not covered by the standard policy. Of these special provisions some of the most important are the following:

The mortgage clause.—There are several ways in which the interests of a mortgagee may be protected. He may himself take out insurance to protect his own interest; he may receive an assignment of the insurance from the mortgagor; or he may be protected by indorsement of the policy creating a claim in his behalf. The legal effect of these various devices has been interpreted quite differently in different jurisdictions, and as a result there has been developed a standardized mortgage clause, which is generally considered the most satisfactory method of protecting the interests alike of mortgagor and mortgagee. This clause provides, first, that the insurance shall be payable to the mortagee, as his interest may appear; second, that the rights of the mortgagor shall not be invalidated by any act of the mortgagee, nor by change of title, increase of hazard, failure of payment of premium; third, that the mortgagee must on demand pay any premiums which are not paid by the owner, and shall notify the company of any change in hazard or condition voiding the policy which comes to his knowledge and pay any increased premium necessitated by such conditions; fourth, that in case of cancellation of the policy by

the insurance company the mortgagee is entitled to ten days' notice, instead of the five days' notice required in other cases of cancellation. These provisions seem extraordinarily favorable to the mortgagee and unfavorable to the insurance company, but they are almost necessary if the mortgagee's interest is to be protected, since it is impossible for him to control all the conditions which may operate to invalidate a policy, when the property is in the hands of the mortgagor. In other words, there is a large element of risk against which neither the insurance company nor the mortgagee can guard; the effect of this clause is to put this class of risks on the insurer so long as the mortgagor acts in good faith. In case the clause operates to create a claim on behalf of the mortgagee under a policy which would not be valid against the mortgagor, the insurance company is subrogated to the claim of the mortgagee against the mortgagor, to the extent of the amount it has paid. In other words, if the insurance company has to pay a debt for a debtor who has not complied with the conditions necessary to keep his policy in force, the insurance company succeeds to the mortgagee's position as a creditor. On the other hand, if payments are made under this clause to a mortgagee under a policy which is fully valid, the debtor is entitled to have such payments credited as payments on the debt which the mortgage secures.

Coinsurance.—Coinsurance is a device adopted to protect insurance companies from a kind of adverse selection which arises in communities where most losses are partial. Under this clause the insured property owner can collect for partial losses only in the proportion that the insurance actually carried by him bears to a certain percentage of the value of the property. Insurance to the amount of this required percentage is nominally required, but the policyholder is under no compulsion to buy it; if he carries a smaller amount he is himself a coinsurer for the balance up to the stipulated percentage. The effect of the clause may be illustrated by the following cases:

Value of Property	Coinsurance Clause	Insurance Carried	Loss	Amount Collectible
	Per Cent			
$10,000	80	$4,000	$1,000	$ 500
10,000	80	4,000	7,500	3,750
10,000	80	4,000	8,000	4,000
10,000	80	4,000	9,000	4,000
10,000	80	8,000	1,000	1,000
10,000	80	8,000	9,000	8,000
10,000	100	4,000	1,000	400
10,000	100	4,000	9,000	3,600

In case of total loss, the coinsurance clause has no effect on the amount payable.

The argument in favor of the clause is briefly as follows: In cities where there is good fire protection, and particularly in buildings where parts of the property are separated by fireproof walls, the probable amount of the loss from a given fire is not large in proportion to the value of the property. In fact, taking the experience of insurance companies throughout the country into consideration, the proportion of total losses is not above 5 per cent, and in centers where the insurance protection is good it runs much below that figure. In the absence of a coinsurance clause, the effect of this large proportion of partial losses is to make partial insurance nearly adequate to protect the property owner, and to make additional insurance after the probable loss has been covered extremely expensive in proportion to the risk. If, for instance, an individual insures property worth $10,000 for $3,000, he is protected fully against probably three-fourths of the hazards his insurance is intended to cover. Another $3,000 insurance is much less expensive for the company to furnish and protects him against a much less serious risk. The additional $4,000 necessary to protect his property fully, protects him against a still more remote hazard, in many cases against little more than the risk of conflagration.

A more logical method of meeting this situation would be to split the risk, charging a different rate for successive increments of insurance so that a small policy would be paid for in proportion to the risk it imposed upon the insurer.[1] A coinsurance clause accomplishes the same purpose in a simple way by making it practically necessary for the insured to take out a sufficient amount of insurance to satisfy the requirements of the underwriters.

The commonest form of coinsurance is probably the 80 per cent clause, although requirements run all the way from 40 to 100 per cent.

When property covered by blanket policies is scattered in different localities or the contents of a given building are stored in compartments entirely separated from one another by fireproof walls, the case for coinsurance is the strongest. No company could afford to write blanket insurance without some sort of protective clause on property stored in this way. Before the introduction of the coinsurance clause, it was the practice to require a separate specific insurance on each compartment, but this was awkward and it was frequently the case that property was shifted so frequently from one

[1] This method is used in insuring fireproof buildings, under the Universal Mercantile Schedule.

compartment to another that it was impossible to adjust the premiums and the losses equitably. This was especially true in the case of manufacturing enterprises where the raw materials went in process from one section of the plant to another.

The coinsurance clause is compulsory in many European countries, but in this country it has not been made compulsory and in many states has been prohibited by law or discouraged through administrative rulings.

Three-quarter loss and three-quarter value clauses.—The hazard involved in insuring rural property is quite different from that connected with urban risks. The chief difference arises from the fact that the proportion of total losses is much greater in the case of rural property. This is true because frame construction is more common in rural than in urban architecture, because farm buildings are more likely to be left unobserved long enough for a fire to gain headway, and most important of all because of the lack of fire protection. Thus the moral hazard is rendered more serious in the case of rural than with urban property, for it is only in the case of total losses that there is much danger of the company's being called upon to pay materially more than the amount actually lost.

The result of the circumstances just outlined is that instead of encouraging full insurance by coinsurance clauses and similar devices the primary interest in rural insurance is to keep the amount of insurance relatively low in proportion to the value insured. In regions where insurance experience has been unfavorable and the proportion of total losses is high, insurers find it desirable to include in policies a clause limiting liability to three-quarters the value of the property, or in still more drastic form, to three-quarters the amount of the loss.

Use and occupancy, profit, and rent insurance.—As has been noted, the standard fire insurance policy covers only the destruction and damage which result directly from fire, or from efforts to extinguish fire or rescue property from its effects. It does not provide for the personal or business losses which may result from interruption of the use of the property. Yet these indirect losses are of considerable volume, occasionally indeed almost as significant as the direct loss of property. If, for instance, a canning factory is destroyed by fire at the beginning of its active operating season and the full value is promptly paid by the insurance company, the delay incident to investing the proceeds in a new building and new equipment will probably mean the loss of an entire year's profits together with the indirect costs incident to maintaining the organization during the

period of interrupted production. Likewise, the destruction of a merchant's stock of goods, even though the goods are replaced within a reasonable time, may well mean the loss of one turnover from the year's business.

To provide for such indirect losses as these, a number of special types of insurance have been devised which may be attached to the standard policy, or may be written as separate policies. Use and occupancy insurance, or as it is sometimes more clearly designated, "business interruption insurance," is written on buildings, and provides protection (*a*) against the loss of anticipated profit on goods, the production of which is prevented by the occurrence of a fire; (*b*) against the loss of fixed charges and expenses necessarily continued during such interruption; but, (*c*) not to exceed a specified proportion (usually $\frac{1}{300}$) of the amount of the use and occupancy insurance for each working day lost. Fixed charges and expenses include, for purposes of this type of insurance, not only ordinary salaries, rentals, and maintenance of property, but also such items as taxes, interest, insurance premiums, royalties, and advertising expense.

Profit insurance is written on merchandise held for sale, and covers the loss of profit which might reasonably have been anticipated from the sale of the goods destroyed. A similar policy is written to protect commission merchants against the loss of commissions on goods consigned to them.

Rent insurance is written in a variety of forms. It includes insurance to protect a landlord against the loss of income during the period when his property is untenable on account of fire; "leasehold insurance," payable to a tenant to protect him against the risk of having to pay higher rental during an interruption of his tenure of property held under lease, or to protect his profits from subleasing; and "rental value insurance," which protects an owner occupying his own building against the risk of having to pay rent elsewhere while his building is being repaired or rebuilt.

Use and occupancy, rent, and profit insurance are increasing rapidly in popularity; a further increase in their use seems probable, as they become better known, for they furnish protection against a hazard which is quite as inescapable as is the fire hazard itself.

IV. COMPANY ORGANIZATION

Stock companies.—The dominant type of fire insurance organization is the ordinary stock corporation, organized for profit. It is

customary to combine the business of fire insurance with marine insurance, and frequently other types of property insurance are also written.

As in life insurance, it is customary to accumulate a large surplus to serve as a secondary reserve against extraordinary losses, and in the case of old companies this surplus may come to be much larger than the capital stock. In the early history of a company, no great amount of capital is needed, and under ordinary conditions it is possible to expand the surplus out of earnings as fast as the capital needs expand. The chief function of the surplus is to provide a reserve for the conflagration hazard, which is a much more serious hazard than the corresponding catastrophe hazard in any other form of insurance (except crop insurance).

Just as is the case in life insurance, the insuring company is required to hold reserves against its policies, which are not the property of the company, but of the policyholders. In the case of an insurance company, it is not considered necessary, however, to keep a separate account of the reserve on each policy. The reserve consists simply ot the premium paid in advance for which no protection has yet been given; hence can be computed for the group of similar policies, as a whole, more readily than it can be done in life insurance policies, where the reserve arises from excess premiums paid in to secure lowered rates many years in the future. The usual custom is to treat all policies issued in a given fiscal year as though they were issued at the beginning of that year; that is, to hold at the end of the year a reserve of one-half the premium against all one-year policies issued during the current year, three-fourths against two-year policies issued during the year, one-fourth against two-year policies issued during the preceding year, and so on. This method works out slightly in favor of companies which are expanding rapidly, as more than half of each year's business is likely to be done in the last half of the year, so the amount actually due policyholders as unearned premium is somewhat larger than the reserve figured on the customary basis.

Mutual insurance companies.—The two most important groups of mutual fire insurance organizations are the farmers' mutuals and the factory mutuals.

The Farmers' Mutuals constitute one of the best examples of cooperative enterprise in the distribution of risks. There are about two thousand of these organizations in the United States, the usual scope of their operations varying from a township to several counties. Their organization is very simple, there being, as a rule, only one or two paid

officials who look after the accounting, collections, settlements, etc., while an executive committee which receives only a nominal compensation passes on application for insurance and decides matters of policy. The method of operation in some cases is to collect the regular premium charged by the stock companies, and then make rebates to members on the basis of the percentage saved. In other mutuals no premiums are collected and assessments are made to meet claims of policyholders. Members often give notes for a fixed sum, which is the limit of their liability.

In nearly every case, the insurance written is limited to three-fourths or two-thirds the value of the property insured. This circumstance, together with the fact that the members are usually well acquainted with one another's business, makes the moral hazard very low, especially in those mutuals which confine their operations to a unit as small as one county. Few men are as ready to try to throw an illegitimate loss on the shoulders of their neighbors as to impose it on a distant, wealthy, and impersonal stock insurance company.

While many farm mutuals have failed, the showing of the group, as a whole, is creditable. In states where this type of insurance is highly developed, the mutuals have effected for their members' savings amounting to more than half the rates charged by the stock companies. This saving is due in part to the lower loss ratio, due to superior inspection and lower moral hazard, and in part to the economy of operation. Just as is the case with fraternal life insurance, the selling costs have been, in large part, eliminated by the co-operative efforts of the members. Mutuals have also, in most cases, received special favors from the state in the form of tax exemption. Moreover, the homogeneous character of the risks they insure enables them to avoid the expense of maintaining rating bureaus, compiling experience of loss on different types of property, and other expense connected with the making of rates. Finally, it is probable that in many cases the owner of farm property has been charged a rate disproportionate to that charged upon certain classes of urban property. Farm mutuals, by isolating their own class of risks, have been enabled to secure insurance at rates which give them the full benefit of their immunity from conflagration hazard, while their use of the three-quarter value clause has freed them from much of the disadvantage resulting from the high proportion of total losses which characterizes farm property insurance.[1]

[1] Cf. V. N. Valgren, "Farmers' Mutual Fire Insurance," *Year Book of the Department of Agriculture*, 1916, pp. 424–28.

Factory mutuals.—Outside the field of rural insurance the most important application of the mutual principle in fire insurance is in the field of factory protection. The cotton-mills of New England have been particularly successful in reducing the cost of their fire protection through mutual insurance. The plan of organization is similar to that of the farmers' mutuals described above. The factory mutuals have not only effected great reductions in the cost of insurance through economies of operation, but have been of especial value on account of the service they have rendered in reducing the actual fire hazard. The leading factory mutuals co-operate to maintain an elaborate inspection service and set a very high standard of fire protection. It is said that their activities have transformed some of the worst of fire traps into the safest kind of buildings in America. As a rule the factory mutuals collect the same premium that the stock companies charge, then make rebates of the unused premiums. These rebates frequently run to 50 per cent of the premium.

Lloyd's.—A Lloyd's Association is a voluntary association of individual insurers who divide among themselves the risk under insurance contracts, the number of individual insurers and the proportion of risk taken by each being determined separately for each transcation. The Association itself does not write insurance; it simply furnishes a place of doing business, establishes a standard form of policy, arbitrates disputes, and looks after matters of mutual interest to the members.

The policy written at Lloyd's is very simple and has been the subject of much less litigation than is the case with other types of fire insurance policy, for the reason that it is the regular practice for no insurer to assume liability for an amount large enough to justify his disputing a claim except in cases where the claim is obviously unjustified. Proposals for insurance are made to the insurers through brokers, and the insurers sign for such amount as each of them sees fit to accept at the price agreed upon. In case any insurer repents of his bargain, he is free to reinsure, and often does so at a much higher premium, thus passing on the risk or distributing it over a wider group of insurers.

By far the most important of the Lloyd's Associations is the original London Lloyd's, which is primarily an association for insuring marine risks, but includes in its activities insurance against a very wide variety of hazards, including fire. Most of the American Lloyd's have been of small importance, though there are a number of exceptions. The London Lloyd's does a large volume of business in this country.

Lloyd's Associations are especially important as a source of insurance against unusual hazards which ordinary insurance companies do not care to handle. The insurer at Lloyd's, being a private individual who sets his own standards, can take chances with novel types of hazard to which a great stock company would find it very difficult to adapt itself. American insurance tradition is particularly hostile to the acceptance of risks of such unique character that no satisfactory mathematical estimate of the hazard can be made. But English insurers, particularly the insurers at Lloyd's, have exactly the opposite tradition, and will furnish insurance against almost any contingency. For example, during the Great War, Lloyd's insurance was regularly written against the war ending, or not ending, before a fixed date. Much Lloyd's insurance is written against such contingencies as bad weather on holidays, causing loss to tradespeople. A Lloyd's representative, in a western city a few years ago, worked up a thriving trade in insuring fur coats against fire, theft, accidental damage, and any unfortunate event not due to the will of the owner. One applicant is said to have secured a Lloyd's policy insuring him against any loss incurred through future damage suits against him for violence he might commit in a fit of anger against one of his family connections.

Reciprocal insurance.—Reciprocal or interinsurance against fire is a development of the co-operative principle, which is intermediate in character between an ordinary mutual and a Lloyd's organization. It is like the mutual form in that its members are at the same time insurers and insured, and in some of its forms it differs little from the ordinary factory mutual; in other cases its members are practically Lloyd's insurers writing policies on one another's property. The following article describes the reciprocal organization so well that further description is unnecessary:

A reciprocal or inter-insurance exchange is a place where business concerns exchange with each other contracts of indemnity against fire and lightning (or other hazard) for certain definite amounts. A is insured by B, C, D, and E. B is insured by A, C, D, and E. C is insured by A, B, D, and E. D is insured by A, B, C, and E. E is insured by A, B, C, and D. To make the exchange of contracts each applicant for insurance, called a subscriber, gives a power of attorney to a manager, called the attorney-in-fact, who conducts the exchange. Suppose 101 concerns are to make the exchange, each having authorized the attorney to bind it for a sum not to exceed $1,000 on each risk. If Concern No. 1 wishes $110,000 of insurance, it cannot be had, for there are only 100 other subscribers. It can get a $100,000 policy. The standard fire policy of the state in which the applicant resides is written

up. At the end of the policy a clause is added specifying the liability of each signer to be one one-hundredth part of the face, or $1,000, and the signature of each of the hundred other concerns is affixed by the attorney-in-fact. If Concern No. 2 desires a policy for $25,000, it is signed by each of the other concerns under a final paragraph stating that the liability of each is $250. If there are 412 subscribers and each limits his liability on a single risk to $2,000, the largest policy that can be written is 411 times $2,000, or $822,000; on a policy for $25,000 the liability of each subscriber would be $25,000 divided by 411, which is $60.83. The amount of liability, $100, $250, $500, $750, $1,000, $2,000, $2,500, or $10,000, which a subscriber will assume on a single risk is specified in his power of attorney.

Subscriber's agreement and power of attorney.—It would be inconvenient for each subscriber to receive and pass on every application for insurance. Therefore each subscriber delegates the power to examine applications and sign policies to the same person, the attorney-in-fact, who is the manager of the exchange. The attorney is thus enabled to do business for all in one place at one time. The instrument which each subscriber gives him is called the "subscriber's agreement and power of attorney." The agreement and the power may be separate, but usually they are together in one document. This instrument specifies all the details of the method and prescribes the duties that may be performed for the subscriber by the attorney-in-fact.

Premiums and expenses.—The premium which is paid in advance to the manager is nearly always the same as is charged by the stock fire insurance companies. The manager's compensation is a commission on the premiums. This commission varies according to the character of the business of each exchange. Many exchanges have it fixed at 25 per cent; a wholesale grocers' exchange operates at 20 per cent; department store exchanges get off at 15 per cent or even 10 per cent. What this compensation covers in addition to the services of the manager is illustrated by this quotation from a subscriber's agreement:

"It is expressly agreed and understood that they (the managers) shall, out of said compensation, themselves defray all disbursements of every character, except losses, counsel fees, costs and expenses of lawsuits, taxes, legal assessments, expenses of fire control, fees of the advisory committee, and all expenses incident to the investment and custody of funds and securities, and of the adjustment of losses."

The manager himself pays for rent, salaries, traveling expenses, printing, supplies, etc. All premiums after expenses and losses have been deducted, belong to the subscribers. The most successful group of inter-insurers have regularly saved for themselves 85 per cent of their premiums. Another group has returned amounts equal to 78 per cent of the premiums received. Some exchanges report savings of 50 per cent, some 25 per cent, while others have failed absolutely and produced net losses to their members.

Separate accounts for each subscriber.—Since the premiums are the property of the separate subscribers (every contract examined declares there are no joint funds), separate accounts with each member are necessary. Two different methods of accounting are used. *Plan One.* The premium of each subscriber is held in trust for him. Each account is credited with the premium received and with the earnings from the investment of the premium and the accumulated surplus. Each account is debited with its share of expenses and losses. The balance, if there is a credit balance, is the saving of the subscriber from the premium paid. *Plan Two.* The premium paid by a subscriber belongs pro rata to the other subscribers who have signed his policy. Each account is credited with its share of every premium received and with the earnings from the investment of the credit balances. Each account is debited with its proper share of expenses and losses. The credit balance, if there is one, is profit realized from the business of insuring fellow-subscribers. By this method a subscriber who carries much less insurance than his fellow-members may receive profits greater than his premiums.

Reserve against unusual losses.—It is a common rule to require that all savings or profits be allowed to accumulate until a surplus equal to double the subscriber's risk on a single policy is provided.

Payment of excess losses.—If current losses are so great as to exceed the amount of current premiums and accumulated profits,what is the liability of each subscriber? Some reciprocals place no limit upon their right to assess subscribers. Some provide that each insured shall not pay more than his annual premium on any one risk; some that he shall not pay more than one additional premium on any one risk. Such provisions still leave no limit to the liability for aggregate losses. There is a type of agreement in use, however, that attempts to restrict aggregate losses to the annual premium or deposit, by means of payments for reinsurance. The exchanges writing the largest hazards provide that in case of one fire involving several risks the insurance in force must be reduced to make the pro rata liability of each subscriber no more than a multiple of, say, four or five times the liability on each risk. The aggregate liability in the case of many single fires is still, as it should be, unlimited. Usually the subscriber authorizes the attorney, in the event that the surplus is insufficient to pay losses, to draw on him, and, if necessary, sue him for the amount, provided the maximum liability of the subscriber has not been reached. Sometimes the agreement calls for a flat sum to be paid on demand in case of excess losses. It is always possible to authorize the attorney to insure the subscriber against excess liability. Some of the exchanges provide regularly for the deduction of 5 per cent of the premiums to take care of this cost of reinsurance. Maximum liability is the knottiest problem of the reciprocals. Can you limit liability and still have good insurance? The proper solution is not to weaken insurance by attempting to restrict liability by contract, but to lessen losses by sound underwriting, and not assume the hazard of conflagration. Here

is one such plan: "It is our policy not to write more than the equivalent of one risk limit in any one city block or square, and not to write more than the equivalent of five risk limits in any city." When maximum limits are involved the subscriber must know how many risks are about him. If his contract limits his liability on a single risk to $1,000 and to four times that on a single fire, and there are eight other risks in that area besides himself, he is only one-half insured against conflagration. If there are only four other risks in that area, he is insured to the face of his policy even if a conflagration occurs.

Special class insurance.—The big advantage claimed for reciprocal insurance is that it is more economical. How is it possible to insure for less than is charged by the stock companies, the best of which lead the world in insurance ability? The factory mutuals of New England proved that if only the highest class risks of one kind were studied and accepted the cost could be reduced. This idea is characteristic of the best reciprocals.

An examination of the risks of reciprocals shows them to be certain special lines such as bank buildings, steam laundries, steam bakeries, lumber mills, wholesale houses, drug stores, hotels, and department stores. An inter-insurer of hotels and drug stores says: "We write only upon buildings of brick, stone or fireproof construction and the contents therein, in towns or cities with adequate fire protection." One exchange advertises the following safeguards: "Elimination of moral hazard; wide separation of risks; rigid inspections; thorough equipment of automatic sprinklers—no exceptions." The manager of another exchange says: "The principal features that make for the success of our insurance are the following: No concern worth less than $125,000 is eligible on account of the assessment feature; in other words, he must be strong enough financially to meet an assessment of $20,000 without flinching, if called upon to do so (no assessments have been made for twenty years). No application is approved unless the concern is of the highest commercial standing in the community. Our inspection department is a most important adjunct and we maintain a corps of specially trained men at a very heavy expense, who do nothing but inspect our risks from the Atlantic to the Pacific four times a year. Our subscribers, who are not in business to burn, cheerfully coöperate with our efforts to minimize the fire hazard."

The writer went to a subscriber to this reciprocal and asked him if he would show him the signatures to his insurance policy. As he read over the names of America's leading merchants, he realized the literal truth of what the attorneys had written him and began to comprehend how it has been possible for this group during twenty-five years to have a loss record of only $536,000 and to pay back to its members a total of $6,000,000 in cash refunds.

The advisory committee, or trustees.—The advisory committee is a part of every reciprocal organization. In some cases it is a real power, though in others the opponents of the method declare the members of the committee

to be figureheads utilized by profiteering managers. This committee is elected by the subscribers and has three, five, or seven members.

Objections to reciprocal insurance.—The chief objections to reciprocal insurance have been summarized by John F. Ankerbauer[1] who has been one of the leaders of those opposing the method. They are as follows:

1. *Subscribers do not understand the nature of their obligations under the subscriber's agreement; they have little or no knowledge of the obligations incurred for them by their attorney-in-fact.* This objection can be met by the subscriber's studying carefully his power of attorney, his articles of agreement, and the reports of his attorney which every agreement should require at frequent intervals. Such study should lead to care in the choice of a reciprocal.

2. *Reserves are inadequate.* This has been true of some reciprocals. It is true of every exchange that fails. A prospective subscriber should shun a reciprocal unless adequate reserves as required of old-line companies are maintained. He should make sure that there is both a premium reserve and an accumulated surplus as a provision against unusual losses. He should also find out whether a sound policy for investing reserves such as is compulsory for stock companies is carefully followed.

3. *The subscriber does not know the identity of his fellow-subscribers who are insuring him.* Unfortunately some exchanges are doing business in such a fashion. They should be forced to change their method by lack of business. Nobody should think of taking insurance from unknowns.

4. *Some exchanges mix the business of separate industries when the insurance by groups is supposed to be distinct.* If steam laundries, bakeries, and hotels insure each other at the same exchange, each insuring others of the same industry only, it is a misrepresentation when the accounts of resources and liabilities are not kept entirely separate and so reported.

5. *If the attorney does not settle a loss satisfactorily, suit has to be brought against too many persons in too many places.* Most contracts provide that the attorney shall accept process, permitting all suits to be brought in one place. The prospect of legal trouble emphasizes the importance of dealing only with a high-class exchange composed of manager and subscribers of unquestioned responsibility and integrity. Legislation for reciprocal insurance, as pointed out below, attempts to simplify the matter of bringing suits.

6. *It is beyond the power of a corporation to have such insurance unless its charter gives it permission to engage in the insurance business; if such participation is not legal, no liability can accrue.* There have been some court decisions supporting this view. In one state some large concerns have withdrawn from reciprocal exchanges on account of the advice of counsel that the above objection is well taken.

[1] *Inter-insurance Information*, 32 pages. (Cincinnati: John F. Ankerbauer. Not dated.)

Since authorities differ it becomes necessary in each state to discover the weight of opinion and act accordingly. The uniform reciprocal law which has been adopted in so many states clears up this problem by providing expressly: "Any corporation now or hereafter organized shall, in addition to the rights, powers and franchises specified in its articles of incorporation, have full authority and power as a subscriber to exchange insurance contracts of the kind and character herein mentioned. The right to exchange such contracts is hereby declared to be incidental to the purposes for which such corporations are organized, and as fully granted as the rights and powers expressly conferred upon the corporation."[1] It is said that the constitutionality of such a blanket addition to charters of all corporations will be attacked.

7. Just as serious, in some states, as objection number 6 has been the view of some state insurance departments that *inter-insurance without a license from the state department is contrary to law.*

Before the passage of the reciprocal insurance law by Virginia in 1918 agents in that state were subject to arrest. Persons who wished such insurance went to New York, Chicago, St. Louis, or Kansas City, Missouri, for it, and became parties to agreements with firms and corporations not resident in Virginia. This practice was so general in states not providing by law for reciprocal insurance, that a manager of a western exchange said that he expected to write little more insurance in a certain state after the law was passed than he had been writing before its passage.

8. *A reciprocal insurance agreement forms a partnership; liability cannot be restricted by contract, and each subscriber may be liable for the entire face of the policy.* This objection seems doomed, certainly in states where such insurance is provided for by statute, and in any other state where such a contract is not repugnant to its constitution or statutes. There seems no doubt of the limited liability if the attorney signs each policy separately for each subscriber, and specifies that the liability is several and not joint. If every subscriber has made the same kind of usual agreement, there is no partnership. Every subscriber possesses that agreement in duplicate, or has seen it, so there are no innocent third parties.

9. *The attorney-in-fact has too much intrusted to him; he is an autocrat.* There is great danger here. To safeguard against an incompetent or a dishonest manager, a strong advisory committee or board of trustees must be provided. Unsafe underwriting and insufficient inspection are to be guarded against. In practically every case the manager's compensation comes from a percentage of premiums. He is tempted to assume risks that are less good and to give the applicant the benefit of the doubt. He is less likely to yield if he realizes that, as losses increase, subscribers diminish; but the

[1] Section 9, Ohio House Bill No. 325, 82 General Assembly, Regular Session, 1917.

best restraining influence is to subject him to the control of the subscribers acting through a committee.

10. *The advisory committee does nothing; it trusts the attorney.* Unless the committee is annually elected by the subscribers, given authority over the managers, and paid for their services, this is a real objection. While a competent manager must have a free hand, certain exchanges have trustees who really act as a board of directors. Within the past year the manager of one exchange was retired.

Advantages of inter-insurance.—The advantages that are claimed for reciprocal insurance are as follows:

1. *The expenses of operation are less, due to dealing with a particular class of risks, permitting specialized service, and the reduction of local commissions to a minimum.* Many exchanges have no local commissions to pay. Some exchanges operate at a low cost, but there are others that have saved little or nothing for their subscribers.

2. *All but high-class risks are eliminated.* This is true for some exchanges and untrue for others.

3. *Frequent inspections by trained inspectors.* This is a great advantage of some of the exchanges. There are others that do very little along this line.

4. *Consolidation of small policies into a large one.* Many companies will not write more than a small part of the insurance of a large concern. The insurance obtainable by the reciprocal method in one policy runs all the way from a small amount up to over one million dollars.

5. *The probable large saving.* Some people have not saved anything; others save 25 per cent to 85 per cent of their premiums.

Legislation.—The sweep of legislation to favor reciprocal insurance and to control it indicates that the states recognize both the strength of the reciprocal method and the dangers of its misuse. The main features of such legislation are: (1) to require reciprocals to file copies of their agreement, powers of attorney, and contracts; (2) to make complete reports of their condition to the department of insurance; (3) to compel the maintenance of premium reserves, a minimum amount of business, and the possession at all times of such an amount of quick assets as to make certain their ability to settle at once a heavy loss; (4) to enable a suit to be brought by a claimant in his own county against the attorney, or any, or all of the subscribers by serving process upon the state insurance commissioner who is declared to be the representative for that purpose of the attorney and each of his subscribers; and (6) to tax the business of reciprocals as other insurance is taxed.

Conclusions.—A study of the methods, advantages and disadvantages of reciprocal fire insurance leads one to conclude that the principle is sound, but that such insurance is neither incompetence-proof nor crook-proof. In theory the attorney-manager is the agent of his principal, the subscriber.

That is proving to be the soundest practice. The attorney ought to be subject to control by the subscribers. Just as directors are a real force in the management of a bank or insurance company, so the advisory committee ought to be in a position, if need be, to assert its authority over the attorney. It seems contrary to good principle for an agreement to read as one did: "Neither the subscriber or subscribers, has, have, or shall have, any ownership or property interest in or to the business, plan of business, system of indemnity insurance, office or office property of the attorney-in-fact, or any property right in or to said exchange." The manager must be a successful underwriter and a man above reproach, committed to the welfare of his principals, rather than a self-seeking adventurer. All but high-class risks must be eliminated, and rigid, frequent inspection must be enforced. For people who intend to adopt every means of preventing fire, who themselves constitute no moral hazard, whose commercial integrity is the highest, whose several properties are widely scattered, but whose interests draw them so closely together that they have knowledge of each other's integrity, there is a profitable field for reciprocal insurance. For other people the range of liability is so great that the value of the plan is doubtful. *The business man must proceed as carefully in its use as if he were buying stock in a corporation or extending a line of credit.* Instead of getting insurance he may increase his liabilities. Rockefeller's success in oil does not foreordain the success of every oil project.[1]

V. RATES AND RATE-MAKING

The rate in fire insurance is quoted as the number of cents per annum per hundred dollars insurance. Considerably lower rates are granted on three- or five-year contracts, in some cases five years' insurance being sold for as little as three times the annual premium, while on the other hand the "short rate" for less than one year's insurance is much higher than the annual rate. The practice of extending much lower rates for long than for short contracts is due to several causes. The burning rate is somewhat higher during the earlier period of the life of the average policy, presumably on account of greater moral hazard; the selling costs are less on long-term than on short-term policies, and the office expenses connected with the issuance of the policy are of course proportionately much greater on short contracts; the excess premium on a long contract is a clear gain in case a total loss occurs in the earlier period; and the danger of losing a given piece of business to a competitor grows less as the term of the contract increases.

[1] Adapted by permission from J. Anderson Fitzgerald, "Reciprocal or Inter-Insurance against Loss by Fire," *American Economic Review*, X (March, 1920). 92–103.

The determination of the proper level of insurance rates, as a whole, is not an extremely difficult problem, but the proper apportionment of the burden is a source of great perplexity and controversy. The problem is not dissimilar to that which arises in connection with freight rates, where the determination of the amount necessary to maintain service and provide a fair return on capital is simple compared to the problem of distributing this cost to the various kinds of service rendered. In fire insurance, the difficulty arises from the irregularity of the incidence of fire loss from year to year, and from the extreme complexity of the factors which make one individual risk greater than another. The total income of the insurance company, if the business is to continue, must be great enough to provide for normal losses, the expenses of carrying on the business, a contribution to a conflagration reserve, the proper size of which is a matter of conjecture, and a fair return on the invested capital. As the bulk of the invested capital is in the form of income-bearing securities, however, the necessary return to capital from the insurance operations is quite small. Aside from the small fixed assets and the money used up in organization expenses, the capital pays its own way, except for the return necessary to compensate investors for exposing their capital to the hazard of loss through conflagration. In many years the underwriting profit is quite small, but over a period of years the business has proved very profitable for the majority of those engaged in it. When returns are stated as a percentage on capital, the business appears more profitable than it really is, because of the large amount of invested capital which is carried as surplus. Much of this is the result of the accumulation of past profits, but quite commonly part of the surplus represents capital obtained by selling stock at a premium, a practice necessitated by the laws of certain states which require the entire capital stock to be held in securities of a specified character.

The adjustment of the rate to the individual hazard is much more difficult in fire than in life insurance, because so much greater effort is made to take account of factors which cause variation in the degree of risk. Whereas in life insurance it is practicable to draw a line between the insurable and the uninsurable, and then subdivide the insurable into groups according to age alone, in fire insurance the rate on certain types of property is adjusted to take account of several hundred different elements of variation in the risk. The resulting groups of risks which are alike in all respects are too small to permit

statistical justification of any rate for each group separately. The variations in rates on different kinds of property are expressions of the judgment of experienced underwriters as to the effect which a given difference in construction, occupancy, exposure, or protection ought logically to exert upon the loss ratio. Each company is constantly studying its experience to secure a better basis for rate-making, but little has been done toward making their accumulated experience common property, and until much more detail has been made public, concerning the actual experience with different types of risk, fire insurance rates will remain under the suspicion of arbitrariness.

In most parts of the United States, rates are made by associations of insurers, which serve the double purpose of effecting an economy in the work of inspecting properties, constructing fire maps, computing rates, etc., and of eliminating any tendency toward cut-throat competition. The rates made by these associations are subject to a limited amount of supervision by the insurance authorities of the various states, some states requiring merely the filing of rates, others intrusting to their commissioners extensive powers of revision. In a few states, the full power of making rates is lodged by law in the state authorities.

In adjusting the rates on individual risks, two methods are in use. In the case of farm buildings, dwellings, churches, and a number of other classes of building, where the difference in individual hazard is not great, the principle of *classification* is employed. Under this plan, risks are thrown together into a few classes which are roughly alike, and one rate is applied to the entire class, subject to a modification in the case of city property based on a rating given to the city. For instance, all three-story brick apartments in a given city may be given one rating; all frame dwellings another rating; all brick churches another; and so on. The second method, which is generally applied to mercantile and industrial property, is known as *schedule* rating. Under this system, no attempt is made to group together all risks entitled to the same rate. Instead, the rate is built up by establishing an arbitrary starting-point in a given combination of features of hazard, then drawing up a detailed schedule of additions and deductions from a basis rate which is assumed to be applicable to this standard. Manufacturing risks are rated under a great variety of special schedules, while mercantile properties are generally rated under some modification of one of two systems, the Universal Mer-

cantile Schedule, which is widely used in the East, and the Dean Schedule, which is universal in the West.

The Universal Mercantile Schedule starts by defining a standard building and a standard city, and fixes a basis rate of twenty-five cents for the combination of these two standards. Next, the rate for the individual city is determined by adding specific amounts to the twenty-five-cent rate for specific deficiencies, such as narrow streets, inadequate police service, extensive lumber districts, etc., and making deductions for unusually favorable features. Then by a similar schedule of additions and deductions, the rate for the standard building in the given city is converted into the rate for the given building. Successive modifications are then made for the character of the occupancy, the individual fire protection, the exposure, and the presence or absence of coinsurance. The rate on the contents is built up in a similarly complicated manner from the rate on the building, additions and deductions taking care of both the special features of hazard connected with the building and those arising from the character of the contents themselves. The following account of the rating of a manufacturing building gives a good idea of the way in which schedule rates are constructed:

This particular building has been inspected and surveyed by the rater. The degree of municipal and local protection has been measured. This establishes the basis rate of .40 which is a charge commensurate with the degree of protection and covers all general hazards that cannot be segregated and measured. In passing, let it be noted that the better the city protection the lower will be the basis rate.

The rate is established as follows:

Basis rate	.40
Area 15,800 sq. ft.	.04
(The standard unit area is 1,000 sq. ft., a proportionate additional charge being made for larger areas.)	
Parapet deficiency	.04
Skylights not standard	.02
Metal stacks through roof	.06
Outside wood porches, cornices and wooden conveyor	.06
Gallery decks	.03
Occupancy	.92
Shavings allowed to accumulate	.05
No waste cans	.05
Floor oil soaked	.05
No drip pans under machines	.05
Total	1.77
Credit for open finish	.08
Building rate unexposed	1.69

Exposure

From buildings No. 2 and No. 5 at 18 ft.	.34	
From building No. 6 at 15 ft.	.02	
From office at 23 ft.	.05	
From buildings No. 9 and No. 10.	.07	
Exposure charge		.48
Total building rate		2.17

The occupancy charge of 92 cents in the foregoing table is made up as follows:

Grinding, machine shop, and blacksmith shop	.06
Gas tempering furnace	.01
1 brick forge and 1 movable forge	.01
3 crude oil furnaces	.02
High pressure steam boiler using shavings partly as fuel and coal with an unapproved arrangement for shavings in brick room	.26
Inadequate ventilation	.04
Gasoline automobile in building	.12
Woodworking (1 pony planer, 1 rip saw, 1 cross cut)	.10
Wire room (2 auto. wire knotters, 4 wire cutters and straighteners—all on wood using oil)	.24
10 hand knotting machines, additional labor, 28 hands.	.06
Total occupancy charge	.92

With this detailed information in the hands of the business man he can figure exactly how to reduce his fire insurance rate and what the cost of the changes will be.

Assuming that he carries a line of $65,000 on this building his annual premium is $1,410.50. For each .01 reduction in the rate he is saving $6.50 every year.

He finds that he can bring the parapet wall up to the standard requirement for $30.00. By this expenditure he lessens the hazard and reduces the rate .04, thus saving in premiums $26.00 each year. He has the shavings removed daily, installs waste cans, and drip pans under the machines at a small expense. These improvements reduce the rate .15. He finds that his automobile being stored in the building is costing him $78.00 a year in increased premium. He puts the car in a small garage and reduces the rate .12.

By comparing what the hazards are costing him with the expense of correcting them he determines how much he deems it advisable to reduce his own rate. As a matter of fact, the owner makes his own rate—the rater simply measures the hazards in terms of rates.

The rate of $2.17 was reduced to $1.86 by a comparatively small outlay of money. In addition the liability to fire has been reduced. This should be a stronger incentive than the saving of insurance premiums.[1]

[1] Taken by permission from John J. Thomas, *What the Business Man Should Know About Fire Insurance*, pp. 12–13. (Chicago, 1922.)

The Dean Schedule presents several points of contrast to the Universal Mercantile Schedule. The starting-point under this system is a one-story brick building of ordinary construction, in a town of the sixth, the lowest, class. No rate is prescribed for this standard risk, the system being so constructed as to be applicable to any base rate which the rating bureau may consider applicable to the community. The additions and deductions, which adapt the rate to the special features of the individual hazard, are made in the form of percentages instead of flat charges. The theory underlying this system is that a given defect of construction or protection is more serious in a building which is otherwise a poor risk than in the case of a building otherwise relatively safe. The system also provides a much more careful analysis of occupancy and exposure hazards than is attempted in the Universal Schedule.

Upon the whole, the schedule rates seem to be more equitable than the classified rates, perhaps, however, because our knowledge of the actual fire losses with different combinations of the elements of risk is not sufficient to expose the shortcomings of the schedules. As is to be expected in a task of such complexity, it is impossible to secure a schedule which commends itself in all details to the judgment of any one critic, and persons disposed to do so have no difficulty in finding rather obvious flaws in the rating system. Until statistics are available, however, for determining the loss experience on a large number of classes of risk, we shall be obliged to content ourselves with the sort of imperfection which the current schedules exhibit. The most serious criticism is not the occasional absurdity in the relative rates for given risks, but the tendency for certain rates to be warped by the conditions surrounding the selling of insurance, conditions which, as a rule, work to the disadvantage of owners of property which falls within the classified groups. Manufacturers and merchants scrutinize their insurance bills carefully and chambers of commerce and manufacturers' associations are effective means of protest against rates deemed too high. Purchasers of insurance on dwellings, school buildings, and churches, on the other hand, are less effectively organized and are apt to regard their insurance as an item of expense too small to be worth quibbling over, which indeed it often is. So conspicuous has the resulting shift of the burden from certain types of property become, that insurance companies have created an informal classification of properties into preferred and ordinary risks, the term "preferred risk" denoting, not a property

where the burning rate is low, but a property where the insurance rate is high.

If rates were adjusted accurately in accordance with the consensus of insurance opinion as to the hazards involved, even though that opinion might involve a large degree of approximation, there would be no such thing as a preferred risk; one risk would offer as much prospect of profit as another. The notorious preference of insurers for certain classes of business is sufficient evidence of the inadequacy of present methods of apportioning the burden of insurance.

CHAPTER XV

MISCELLANEOUS PROPERTY INSURANCE

Aside from contracts of life and fire insurance, there are innumerable similar arrangements by which the risks of business are eliminated or reduced, through transfer to specialists and consequent combination of risks or prevention of the event insured against. In general, almost any risk is insurable, and will be insured by casualty companies if the following conditions are present: (*a*) a body of experience sufficient to afford a basis of judgment concerning the probable loss ratio; (*b*) a loss ratio low enough so that rates need not be prohibitively high; (*c*) a probability of individual losses large enough to make it worth while for individuals to take the precaution of insuring against them; (*d*) a loss ratio high enough so that individuals are alive to the hazard and can be induced without excessive selling cost to provide against it; (*e*) independence of the separate risks, so that the company can secure a fair distribution of the hazard; (*f*) freedom of the event insured against from complete control by the insured.

Of these many types of insurance, few present special features of interest sufficient to warrant detailed study in a general survey of methods of dealing with risk. The risks of labor and the insurance devices for taking care of financial risks associated with the labor contract will be considered in chapter xvii; other types of insurance include the following:

Marine insurance comprises the whole field of insurance against risks arising from the transportation of goods, and falls into two main branches: ocean marine, which is what is ordinarily referred to as marine insurance, and inland marine, which includes such forms of protection as transportation, tourist baggage, parcel post, registered mail, and motor truck contents insurance.

Ocean marine insurance is the oldest form of indemnity of which there is any record, and the policy usually written retains evidence of its age in the quaintness of its wording. The perils insured against are:

> Of the seas, men-of-war, fire, enemies, pirates, rovers, thieves, jettisons, letters of mart and countermart, surprisals, takings at sea, arrests, restraints, and detainments of all kings, princes and people, of what nation, condition,

or quality soever, barratry of the master and mariners, and of all other perils, losses, and misfortunes that have or shall come to the hurt, detriment or damage of the said goods and merchandises and ship, etc., or any part thereof.

Omitting reference to the items which enumerate hazards of war, the clauses enumerating the hazards may be explained as follows: "Perils of the seas," refers to damage from storm, collision, ice, stranding, and such excessive action of the wind and waves as is not anticipated in the ordinary course of navigation. The line between ordinary wear and tear and damage by storm is sometimes hard to draw, but the principle involved is that the policy shall insure against losses which may happen, not those which must happen. "Pirates, robbers, and assailing thieves," include all outside sources of loss through theft, and "barratry" covers various unlawful acts of master and crew (including mutiny, diversion of the ship from its course, scuttling, and open robbery by the crew), but neither clause covers pilferage by the ship's company. "Jettison" means the throwing overboard of part of the vessel's cargo for the purpose of relieving the ship in distress.

The interpretation of an ocean marine policy is extremely technical, as is indeed the whole of admiralty law, and into the intricacies of the policy it is unnecessary for us to go. A few outstanding peculiarities of this type of insurance, however, may be mentioned. In contrast to fire insurance, the ocean marine policy is, in a great majority of cases, a valued policy.[1] Another contrast with fire insurance is the fact that under certain conditions a marine policy may be valid, even though at the time it was taken out the insured had no insurable interest in the property. This is the case where the property had already been destroyed, but the facts were not known either to the insurer or the insured. This is taken care of by the phrase "lost or not lost," included in the description of the property insured.

A third contrast with the usual practice in fire insurance is the rule with regard to constructive total loss. A constructive total loss occurs when the property insured is not physically destroyed, but is so situated that the cost of rescue or repair would be greater than the value of the property. Notice of intent to claim a constructive total loss is given through "notice of abandonment," an offer on the part of the insured to abandon the property to the insurer in return for payment of the face of the policy. Such notice does not obligate the insurer to accept abandonment, nor does it release the owner from

[1] See p. 293.

the obligation to exercise reasonable care to preserve whatever value may remain; it merely evidences good faith in claiming a constructive total loss.

A very wide range of special clauses and special types of policy is offered. "Voyage" policies cover a definitely described voyage; "time" policies cover vessels for a stated period. "Fleet" insurance covers a large group of vessels by a blanket policy. "Builders' risk" policies provide protection during the construction or repair of vessels. Cargoes may be protected by "named" policies, which designate the vessel to be used, by "floating" policies, which designate merely the voyage and type of vessel, or by "open" policies which cover all the shipments made by a given firm within the life of the policy.

The rates in marine insurance are highly unstandardized, competitive, and unstable. There is no such thing as schedule rating. There is a very limited body of statistical data from which to estimate the risk, and such facts as have been gathered are closely guarded by the individual companies as trade information. Moreover, the moral hazard is very great, and even in the absence of fraud or deliberate carelessness the loss experience of different operators varies widely. Consequently, the element of judgment enters to a greater extent than into almost any other type of insurance.

Tornado insurance is written in connection with fire insurance, and is very popular in sections of the country which are subject to disastrous wind storms. The general provisions are similar to those of the standard fire insurance policy, but the contract is simpler for the reason that there is no moral hazard, and no need of special provision to secure proper protective measures on the part of the owner or tenant. Coinsurance is commonly required, where state laws permit, as the proportion of partial losses is extremely high.

This type of insurance should always be written by a large stock company covering a very wide territory. Local mutuals are in an especially weak position with regard to this sort of coverage, for a severe storm may cause partial loss on nearly every property in its path, with numerous cases of total loss; an insurer must have a very large field of business in order to secure an adequate distribution of risks.

Automobile insurance.—The rapid increase in the use of the automobile, for purposes both of business and pleasure, has created a demand for this new type of insurance. About 30 per cent of the

automobiles in the United States, it is estimated, are covered by one or more of the standard types of policy, of which the most important are the following: (*a*) *Liability* insurance; this policy protects the insured against legal liability and damages because of personal injury to others arising out of the use of an automobile. (*b*) *Property damage* policies protect against injury to the property of others which may result from accidents in connection with the use or ownership of an automobile. (*c*) *Collision* insurance protects against injury to the car owned by the insured, resulting from collision with other cars or with any other object. (*d*) *Fire* insurance policies are very similar to those written on buildings and other property, as described in chapter xiv. (*e*) *Theft* insurance protects against loss of the car, or of its parts or accessories.

In these types of insurance, there is a wide difference in the rates charged in different territories, on different types of cars, and under different conditions of use. For instance, the rate for public liability insurance on a certain car ranges from $103 in the district rated highest to $19 in the district rated lowest; theft insurance in one territory ranges from $6.35 per $100 on one car to $25 on another.[1]

Crop insurance is a highly speculative type, because of the extent to which losses are likely to be coincident for a large number of policyholders; the insurer finds it difficult to secure a proper distribution of the risk. Moreover, in the present organization of the business there is a considerable moral hazard. The best established form is hail insurance, which has been of considerable importance for the past twelve or fifteen years. The total premiums paid for hail insurance in 1919 amounted to $30,000,000; the total insurance in force to $560,000,000.

General crop insurance has been attempted in only a few instances. During the war there were a number of cases of price insurance in New England, but these were effected through associations of public-spirited citizens as a means of encouraging increased agricultural production, and not as a business carried on for profit.

In 1917, three insurance companies operating in the northwest offered insurance against crop failure. This experiment turned out badly for the insurers on account of drouth and failure to provide properly against the assumption of risk after damage had already taken place.

[1] Riegel and Loman, *Principles of Insurance*, chap. xx.

In 1920, two companies again offered crop insurance—one of them including in its coverage protection against loss due to decline in the market value of the crop; an experiment which proved very costly on account of the slump in grain prices of that year. Various forms of protection are now offered in limited territories, but this form of insurance is still in its experimental stage and the outcome is doubtful.[1]

Credit insurance is a comparatively new type of indemnity, which is offered by three leading companies. The object of this kind of insurance, as its name indicates, is to protect business men (wholesalers and manufacturers) against the risk of extraordinary losses due to insolvency on the part of their debtors.

The policy offered contains a number of distinctive features. In the first place, the insured must bear a stipulated initial loss before the insurer has any liability. This amount is known as the normal loss, and is figured on the basis of the average loss ratio to gross sales for the preceding five years. Second, the maximum amount which will be paid on account of a single loss is restricted to an agreed percentage of the customer's capital rating as supplied by a reputable mercantile agency. Third, the principle of coinsurance is applied, but in a manner somewhat different from that used in fire insurance. In the case of customers who have first credit ratings, the insured carries 10 per cent of the loss; in the case of those who have a lower rating, $33\frac{1}{3}$ per cent. The insured cannot, as in fire insurance, get rid of this residual risk by insurance with another company. Fourth, the total liability of the company is usually, but in the newer policies not always, limited to a stipulated maximum. Fifth, the losses covered are those which arise from insolvencies which occur during the life of the policy or within 15 days thereafter. Insolvency is defined very broadly for purposes of the policy, however, including death or disappearance of the debtor, assignment by the debtor, recording of a chattel mortgage on his property, etc.

Judged by the total amount of losses incurred, the hazard of losses through insolvency of debtors is comparable in importance to the fire hazard, as is shown by the following table:

[1] V. N. Valgren, "Crop Insurance," *Bull. U.S. Dept. of Agriculture*, No. 1043, January 23, 1922.

FAILURE AND FIRE LOSSES FOR 10 YEARS*

	Failure Loss	Fire Loss
1921	$750,200,000	$332,654,950
1920	426,300,000	330,853,925
1919	115,500,000	269,000,775
1918	137,900,000	290,659,885
1917	166,600,000	250,752,640
1916	175,200,000	214,530,995
1915	284,100,000	172,033,200
1914	357,100,000	221,439,350
1913	292,300,000	203,763,550
1912	198,900,000	206,438,900
Total	$2,904,100,000	$2,492,428,170

* Huebner, *Property Insurance*, p. 526.

It is not sound to argue from these figures, as has sometimes been done, that the business man's need of credit insurance is comparable to his need of fire insurance. The test of the desirability of any form of insurance is the unpredictable character of the loss, not its total amount. Whereas the fire losses are concentrated in a very high degree, so that only a small minority of business men suffer fire loss in any given year, and that minority suffer very heavily, the risk of loss from bad debts is widely distributed, falling in some degree upon nearly everyone who extends credit, in every year. In so far as the loss from bad debts runs the same from year to year, it can be taken care of as one of the regular costs of doing business, and there is no more need of insurance against it than against any other expense. It is in recognition of this fact that the limitation of liability to loss above a stipulated normal is included in the provisions of every credit policy. Were this not done it would be necessary to increase the premiums by a large fraction of the normal loss[1] and there would also be a significant increase in the moral hazard.

The regularity of credit losses in the individual experience, as compared with the experience with fire, arises from the fact that the business man nearly always has a better distribution of his credit risk than he has of his fire risk. With a few hundred accounts the operation of the law of large numbers assures a high degree of regularity in so far as the risks are independent. The chief protection afforded

[1] Not, however, as has sometimes been stated, by the full amount of the normal loss. The added amount of claims to be paid would never equal the amount of the normal loss on all the policies, as there are always some policies on which the loss in a given year is below the normal amount.

by the policy is against the hazard of crisis, which corresponds in credit insurance to conflagration hazard in fire insurance. The business man is really in the position of the small fire insurance company, rather than in that of the holder of a few pieces of exposed property. The insurance company reinsures if it has a few risks too large to be carried safely in dependence on the working of the law of averages, or if it gets too many risks exposed to the hazard of a single conflagration; likewise credit insurance is chiefly valuable in guarding against the crisis hazard, or in protecting a line containing a few disproportionately large risks. Whether the crisis hazard is great enough to justify insurance of a well-balanced line of credit risks is a question in regard to which opinions may well differ, as the crisis hazard itself changes from year to year. That the hazard is still far from negligible is indicated by the experience of the leading credit insurers, which showed losses amounting to 3 per cent of premiums in 1919 and 89 per cent in 1920.

Miscellaneous Property Insurance. Other standard types of property insurance, which it is not necessary to describe in detail, cover such varied hazards as personal accidents; burglary and theft or personal property; breakage of plate glass (in this case the company agrees to replace the glass or pay its actual value, so that there is no limit to the company's liability in case the glass advances in value after the policy is written); steam boiler explosion (which involves a much larger element of prevention of loss than do most types of insurance); electric engine damage; water damage; sprinkler leakage, etc.

CHAPTER XVI

GUARANTY AND SURETYSHIP

I. INTRODUCTION

The type of specialization which involves the assumption of risk by a specialist who believes that he can foresee the outcome of a venture and decides that there is no risk, or a smaller risk than is generally estimated, finds most of its illustrations in speculation. Outside this field, illustrations are found in contracts of guaranty and suretyship and in certain types of so-called insurance which are really more properly considered as surety arrangements. For instance, a title insurance company guarantees real estate titles, not by figuring the percentage of losses and calculating a premium to cover the risk, as is the insurance practice, but by searching the records until it is satisfied that no risk exists. For the private individual who cannot conduct this investigation for himself, the contract removes an important risk; for the company the risk is negligible.

So with individual guaranties. When a friend signs a card to enable one to draw books from a municipal library, he does not inquire what per cent of guarantors are called upon to make good the losses sustained by the library; he depends absolutely upon his friend's performing his obligations, though he is doubtless aware that some people do not do so. He believes his friend is individually a safe risk, whatever the average may be. The library, not sharing this faith, considers that the guaranty reduces a real risk.

In the same way, when A indorses B's note as an accommodation he may know perfectly well that 1 per cent of the business men in the United States are likely to fail within a year, but he does not figure that he is running a 1 per cent risk; he believes B is all right and will not be among the 1 per cent. If he had any doubt about it, he would probably decline to furnish the indorsement. A bank acceptance is exactly the same sort of transaction. The bank accepts drafts drawn on it on account of a customer, depending on him to provide the necessary funds before the draft falls due. It does not charge an actuarial premium based on statistics of risk; it merely charges a commission for the service. Unless it considers itself safe it does not accept the draft. To the drawer of the draft, who does not share the

bank's knowledge or its confidence in the customer's reliability, the bank's acceptance makes the transaction less risky.

In foreign-exchange transactions certain individuals or firms of excellent standing buy the paper of small firms which have not established their reputation, add their own indorsement and resell the paper in the open market at a higher price. They know, or at least they are convinced, that the less-known firms are sound; but the general public not being so fully informed, the well-known indorsement adds to the market value of the paper. Here again we have a reduction of risk through specialization in securing more adequate information than is generally available.

The ordinary practice of underwriting[1] security issues involves a similar principle. An investment banking-house or a syndicate guarantees the sale of an issue of securities, often knowing in advance exactly where the buyers are to be found; and in other cases considering that there is no significant risk of failure to dispose of the issue. The commission is indeed often in part an actuarial premium for risk undergone, but it is chiefly a compensation for service rendered in investigating the proposal and in facilitating the sale by its indorsement.

Of the numerous ways in which business men transfer risk to specialists who do not carry a corresponding risk, because of superior knowledge or because of ability to prevent losses, two are selected for detailed examination, corporate suretyship, and the protection of buyers of real estate against defects in titles.

II. CORPORATE SURETYSHIP

Corporate suretyship has been described as follows:

The business of suretyship as defined in the insurance law of New York is:

1. Guaranteeing the fidelity of persons holding positions of public or private trust.

2. Guaranteeing the performance of contracts other than insurance policies.

3. Executing or guaranteeing bonds or obligations in actions or proceedings or by law allowed.

It will be seen from this that, in a general way, except as to insurance policies, a surety company may, and generally will guarantee that a particu-

[1] The term "underwriting" is here used in its narrower meaning of guaranteeing a sale, as distinguished from the loose usage of the term as equivalent to outright purchase for resale.

lar principal will do any lawful thing specified, provided the security is satisfactory to the surety company and a reasonable compensation is paid. To really understand suretyship, one must separate fidelity insurance from the other branches. Fidelity insurance is handled as any other line of casualty insurance would be, and while reliance is placed upon salvage, nevertheless the real reliance is upon the fact that only a certain very small proportion of men are likely to be dishonest. It is accordingly underwritten as an insurance proposition. All the other lines, sometimes specifically spoken of collectively as surety lines, are, however, underwritten upon the theory that there is a sound and competent principal who will perform the condition of the bond; and the surety does not seriously contemplate the possibility of being required to pay the bond, but considers that what he furnishes in return for the fee paid is merely a service. In other words, by signing the bond as surety, he extends credit to the principal. Suretyship is just as much the granting of credit as is banking, the only difference being that the bank furnishes to its customer the use of current funds, while the surety furnishes its customer with the opportunity to do something which he otherwise would not be able to do, or enables him to avoid the necessity of doing something until the contingency occurs which makes it certain he must do it.[1]

Formerly, it was the custom for individuals who were called upon to furnish bond for any purpose to make application to individual friends and acquaintances, as is still the practice for the most part in furnishing bonds for appearance of alleged criminals to answer charges against them. For most purposes, however, the advantages of corporate suretyship are so great that, within the fifty years since it was introduced in this country, it has almost entirely supplanted the system of individual suretyship except in criminal business and in the furnishing of surety for the payment of small promissory notes.

Corporate suretyship offers several very distinct advantages over the system of individual guaranties. In the first place, it substitutes an impersonal business relationship for personal accommodation. The result of this is that the assured is relieved of embarrassment and from a sense of obligation to reciprocate. Moreover, especially in the case of bonded public officials, individual suretyship may create an opportunity for the guarantor to exercise pressure in the direction of an undesirable use of official discretion. Finally, the courts are prone to be very lenient in interpreting responsibility of individual guarantors when they are called upon unexpectedly to fulfil an obligation. In the second place, corporate suretyship affords a better security,

[1] Adapted from advertising literature published by the American Surety Company, New York, 1919.

for the resources of the insurer are much larger in proportion to the requirements of any one bond than is likely to be the case with individual guarantors.

The types of bonds usually written by surety companies may be described as follows:[1]

Fidelity bonds protect employers against breach of trust and also in some cases against negligence. In writing this insurance, great emphasis is placed upon such factors as character, family connections, income, standards of living and associates, yet the number of losses is very great. Most of these losses apparently arise from one of three sets of conditions: first, extravagance and dissipation; second, speculation and gambling; third, loose accounting and mingling of employers' funds with personal funds.

Fiduciary bonds cover the liability of trustees. The most important are those given in probate proceedings and in insolvency. In these, as in most of the types of suretyship hereafter enumerated, the moral risk is relatively small, but there are many opportunities for the insurer to become involved in liability on account of carelessness or ignorance concerning his very technical obligations.

Public official bonds are required in most cases where individuals are intrusted with the care of public funds. The liability under this form of suretyship usually extends to any responsibility which may attach to the principal on account of negligence or ignorance, as well as actual breach of trust.

Judicial bonds are given chiefly by defendants to stay execution, and pay judgments; sometimes to cover the liability of plaintiffs for wrongful pursuit of a remedy to which they are not entitled.

Criminal bail bonds guarantee the appearance of a defendant for trial. The moral hazard in this sort of suretyship is of course very great. It is usual, therefore, to require that the principal deposit collateral security with the insurer to cover its liability. In some cases, the courts refuse to accept such bonds on the ground that a bondsman who is fully secured has no incentive to produce his principal for trial; hence the probability of forfeiture is too great to be consistent with the public interest in securing the actual appearance of the defendant.

Admiralty bonds are given by owners of vessels to secure the payment of claims and damages, in order that the vessels may not have

[1] The following description is based in part on *Corporate Suretyship*, an address by First Vice-President R. R. Brown, of the American Surety Company of New York, to the department of economics and social institutions of Princeton University (pamphlet, reprinted from the *Weekly Underwriter*, New York, not dated).

to be held within the jurisdiction of the court while a case is awaiting trial, and by the owners and consignees of goods which are likely to be held liable for a contribution on account of the loss occasioned by the jettison of other parts of the cargo or of parts of the vessel's rigging and equipment.

Depository bonds secure the repayment of deposits by banks; usually deposits of public funds.

Customs and internal revenue bonds are written in many forms. They secure the observance of revenue laws and regulations, or the payment of customs duties on goods released from the control of customs officials. Goods intended for re-export, for instance, may be covered by a bond guaranteeing the payment of duties in case they are not actually shipped out.

Warehouse bonds guarantee the performance of duties by warehousemen. Their purpose is chiefly to enable the owner of goods in storage to secure credit on the security of the goods.

License, occupation, and permit bonds secure the observance of law by persons engaged in regulated occupations, such as plumbers, saloon-keepers, bonded abstracters, etc.

Contract bonds secure the performance of obligations under contract. This is a very large and important class of surety obligations. Bonds are required in connection with nearly all large construction enterprises. Such bonds are very hazardous because of the numerous circumstances which may occasion default on the part of a building contractor, and the great expense involved securing the completion of an unfinished contract. Bonds are also required by the United States government in connection with the performance of mail service and the furnishing of almost every kind of supplies. Supply bonds involve chiefly the risk that the contract will become a source of loss on account of advancing prices; contracts for the performance of mail service are extremely hazardous, as specific performance is usually required.

Lost security bonds indemnify a corporation in case of loss arising from the replacement of a lost instrument which is later found. Such bonds are always required when claim is made that a stock certificate or bond has been lost or destroyed. This type of bond involves very little risk to the bonding company.

III. INSURANCE OF REAL ESTATE TITLES

The title to real estate affords an excellent illustration of the possibility of reducing risk through research. To the average man without

expert assistance, the elements of risk involved in a purchase of real estate on a simple warranty deed are very great. Years after the property has been paid for and large sums have been spent in its improvement, a defective title may result in an actual loss of possession, or, more frequently, a clouded title may necessitate expense in order to clear up the doubt. On the other hand, if sufficient care is taken it is almost always possible at any given time to discover all the flaws in a title, and enable a purchaser to take the property with very little risk. Three principal methods accomplishing this purpose are in use in the United States.

Bonded abstracters.—The simplest system is the employment of a bonded abstracter. Under this plan, the buyer or the seller of property employs a professional abstracter to draw up an abstract of title, which is then submitted to an attorney for an opinion. The abstracter is legally liable if a loss occurs as the result of his failure so to prepare the abstract as to show the facts of record concerning the title, and is heavily bonded to insure the payment of such damages.

This system is widely used in the rural sections of the West and works satisfactorily in the great majority of cases. (Indeed any system works satisfactorily in the majority of cases for the reason that there are usually no unknown defects of title which can cause trouble no matter what system of protection is employed.) The system is incomplete, however, for there are numerous possible defects which are beyond the field of the abstracter's investigation—for instance a forged deed may be recorded and the abstracter will have no way of detecting the forgery, or there may be an undiscovered heir whose rights are not a matter of record. Moreover, there is always the risk that careless reading of the abstract or inefficient advisory work by the attorney may cause a loss in cases where the abstract actually discloses a flaw in the title. Finally, in the older sections of the country, where transfers have been numerous, the mere physical labor of searching records and copying abstracts makes this method unduly expensive.

Title insurance.—In these older sections, especially in cities, the most popular method of dealing with title risks is through the services of a title insurance company. Such a company usually has a virtual monopoly of the business in a limited territory and therefore operates on a sufficiently large scale to justify the expense of maintaining elaborate files, from which the information necessary to pass on a given title can be obtained quickly and economically.

The policy, which is perpetual in its force, insures not only against the establishment of an actual defect in the title, but also against any expense which may be involved in defending title, and against any damage which may be sustained because of the refusal of a buyer to accept the property on account of alleged defects in the title.

Before issuing such a policy, the insurer makes a careful examination of the records and lists in the policy all known defects, and also certain possible unknown defects which are not matters of record. Loss from these listed defects is then excepted from the protection of the policy. Thus the policy serves the double purpose of a report on the existing state of the title and a guarantee against loss due to error and omission in the report.

The essential difference between the protection afforded by such a policy and that afforded under the bonded abstracter system is that in the latter case protection extends only to the result of negligence or wilful error on the part of the abstracter, while in the case of the title quarantee company it extends to numerous potential defects which are beyond the possible knowledge of any of the parties to the contract. The more important of the possible flaws which are not discoverable through searching of the records are excepted from the provisions of the policy, however, so that the risk actually taken by the company is very small.

The following quotations from the form used by a prominent title insurance company indicate the character of the protection afforded:

The X Title and Trust Company shall have the right to, and will, at its own cost and charges, defend the party guaranteed in all actions of ejectment or other action or proceeding founded upon a claim of title, incumbrance or defect, which existed or is claimed to have existed prior in date to this policy and not excepted herein; reserving, however, the option of settling the claim or paying this policy in full. . . . .

Loss or damage by reason of special taxes or special assessments which have not been confirmed by a court of record, conveyances or agreements not of record at the date of this policy, or mechanics' liens when no notice thereof appears of record are not covered by it.[1]

In addition to the limitation of liability just quoted, each policy contains a special schedule of "estates, defects or objections to title, and liens, charges and incumbrances thereon, which do or may now

[1] The quotations are from the form used by a western company. For full standard form adopted by the New York Board of Title Underwriters, see Huebner, *Property Insurance* (revised), pp. 513–19.

exist, and against which the Company does not guarantee." The following quotations from this schedule in a recent policy are typical:

1. Conditions contained in the deed made by John E. Brown and wife to Margaret A. Short dated November 5, 1894, and recorded November 5, 1894, as document 218475, that no building shall be placed on the east thirty-five feet of the premises in question.

2. Party wall rights, if any.

3. Special assessment warrant 36783 for paving Johnstone Avenue, confirmed March 11, 1919, for $108.63 on premises in question, payable in five installments, the last four unpaid.

4. Taxes for the year 1920.

Title policies are not assignable, except when issued to protect mortgages. At each transfer a new policy is issued to protect the new buyer. The cost of subsequent policies is considerably less than that of the first, as little work has to be done to bring the record down to date.

The losses paid by title insurance companies are far smaller than is the case with any other type of insurance; indeed in many cases purely nominal losses are sustained for years at a time. The premium is based on the service rendered in searching the title rather than on the risk assumed. Nevertheless, though the amount lost on account of defects which are not discovered through searching records and are not excepted (such as forged deeds, spurious powers of attorney, deeds executed by lunatics, undiscovered heirs), the loss in the few instances where such flaws exist is likely to be very serious for the persons concerned, and a system by which such risks are transferred at small cost to a responsible insurer provides a real social gain.

The Torrens system.—A third method of furnishing security against defects in title, which has been introduced in recent years in certain parts of the United States, is the so-called Torrens system. This is a system of public registration whereby at each transfer of title the purchaser is given either an indefeasible title or a guarantee of reimbursement in case the title proves defective.

In the original Torrens system, which was established in Australia in the latter fifties, an administrative body was authorized to search the title, and in the event that no defect appeared, the claimant in actual possession was given a certificate entitling him to absolute ownership. A small assessment on all property registered under this system provided a fund from which compensation was made to any holders on unsatisfied claims who might be deprived of their rights through such registration.

The system has had a limited application in England and a considerable popularity in Canada, and within the last few years has been adopted in modified form in about a dozen American states. Under the law of some of these states, registration does not give an indefeasible title, and the fund provided by registrants is used to compensate holders of the registration certificates, in case error is discovered, instead of previous holders of title as under the original Torrens system. In other states, the registrant is given an indefeasible title, but this is done through a formal suit to clear the title, and not through the action of administrative officers.

In theory, the principle of the Torrens law provides a distinct improvement over any of the other systems. It does not seem necessary that in a community where land has been held by private individuals for many generations, investigators should at every transfer review the entire history of the title and reopen the question of the validity of each alleged transfer, as is the practice under the bonded abstracter system. Nor does it seem an ideal system that the community should depend for so essential a service upon the preservation of the records of a private company and the maintenance of its services, as is the case where the title insurance system is used. The Torrens system, by clearing the slate at each transfer, greatly simplifies the whole question.

In most cases, the initial expense of registration is somewhat greater under the Torrens system than in the guarantee of title by a title insurance company, and this cost falls upon a seller who has no interest in the economy which will result in connection with future transfers. For this reason, possibly also because of the influence of the title companies, and also because of administrative weaknesses and doubts in some quarters as to constitutionality, the progress of the Torrens system in America has been slow. The only places in which it has apparently had a significant development are Cook County, Illinois, and the state of Massachusetts, and even there, so far as volume of business is concerned, it is overshadowed by the title insurance companies.

CHAPTER XVII

RISKS OF LABOR

I. INTRODUCTION

As was indicated in chapter iii, the present industrial organization contemplates the transfer to the business man of certain of the risks associated with production, and a corresponding increase in the security of the other factors in production. Under all ordinary circumstances, the laborer can count on receiving his pay for his co-operation in an enterprise quite regardless of the ultimate success of the enterprise. Not only does the employer's capital stand between the laborer and the risks which beset the productive process, but to a large extent those who extend credit to the business manager in any other way have their claims subordinated to those of the laborer.

Nevertheless, the position of the worker is never free from certain elements of risk. This arises in part from the impossibility of framing a labor contract in such a way that all the risk of the business is borne by the management, and secondarily from the fact that the worker must himself carry the risk of being unable to find continuously an opportunity to enter into an advantageous contract for the selling of his labor. A group of students of the labor problem have summarized the situation as follows:

> To carry the analysis into the field of labor, the worker, if he learns a trade, takes the risk that the demand for his services will be inadequate to give him full-time employment at a living wage; he takes the risk that there may be more workers in the trade than can be employed; he takes the risk of changes in the technique of production eliminating the need for his skill and throwing him into competition with myriad unskilled workers; he takes the risk of being injured or becoming infected by occupational disease; he takes the risk of being made a nervous wreck by the "roar and rhythm" of the machine; and always there is the risk that public demand for the product in the manufacture of which he is engaged may cease and leave him out of a job, unfitted to do the work demanded in other lines of industry
>
> Labor trouble is a source of danger to the business manager, but it also threatens the worker. If he goes on a strike to better wages or working conditions he runs a chance that the organization of which he is a member will not be strong enough to win the strike or that strike benefits will be insuffi

cient to keep himself and his family alive. If the strike arouses public ill will, anti-labor legislation may limit freedom of action on the part of labor organizations thus tending to perpetuate the uncertain conditions against which he went on strike.

And so it goes. Inadequate income whether due to unemployment, industrial old age, sickness, accidents, industrial conflict, or low wages bring risks of undernourishment which brings the risk of impaired efficiency which, if it occurs, increases the risks of accident, disease, and low wages. Children brought into the world may have to grow up under the handicaps imposed by such risks and this adds another risk to the already heavy load of uncertainty which the worker has to bear.

Indeed it can be said with a certain degree of accuracy that the worker assumes all the risks of the employer and in addition bears some unique to himself. In common with all individuals he runs the risk of death, accident, fire, war, disease, etc., the risks due to his carelessness which includes many accidents and deaths, and the risks due to the dishonesty on the part of the worker or others; as a member of the working class he bears the unique risks of unemployment, underemployment, or overemployment, long hours, the risk of inadequate wages, the risks arising out of the antagonism between specialists, the risks of specialization, the risks due to the characteristics of the machine, the risks of anti-labor legislation, and the risks of competition from his fellows; in particular industries he runs the risk of seasonal employment, of occupational disease, of sweating, of accidents, or moral devolution.[1]

The risks which the laborer shares with the rest of the race we may well leave without detailed consideration. Our particular interest is in the risks which arise directly from his connection with the economic process. Of these by far the most important are the risks of unemployment and of industrial accident and occupational diseases.

II. UNEMPLOYMENT

Exact figures for the volume of unemployment are not available, but the estimates made by competent investigators agree in showing, first, a high degree of variability in the amount of unemployment, and, second, an appreciable amount of unemployment at the busiest seasons of the most prosperous years. Omitting agricultural labor from consideration, it appears that during the last twenty years the amount of unemployment in the United States has fluctuated from a probable minimum of 1,000,000 to a possible maximum of 6,000,000, out of a total number of workers estimated as about 30,000,000 during the latter part of the period. To some extent, the significance of the

[1] From Douglas, Hitchcock, and Atkins, *The Worker in Our Modern Economic Society* (preprint, chap. v). The University of Chicago Press, 1923.

maximum figures is reduced by the probability that a considerable expansion of agricultural employment coincided with the minimum of industrial employment, but the extent of this absorption of the unemployed has not been estimated.

The distribution of the cost of unemployment is very uneven.—In the case of approximately half the working group, the loss due to this cause is negligible, while within the other half there are very wide individual variations.

Unemployment is a market risk.—Each manual laborer has to sell a definite amount of labor service, each item of which represents an irreplaceable impairment of his stock in trade. At the outside, the manual laborer can rarely sell more than twelve thousand days' service during his working life; the average figure is probably nearer six thousand. Unemployment is simply the failure to market a part of his stock in trade. The seriousness of this hazard arises fundamentally from the fact that his labor is a "perishable commodity." Every day's service must be sold at a given time or not at all.

The difficulty is aggravated by the inelastic character of the price of labor. In times of slack demand, it would frequently be to the laborer's immediate interest to sell his time at a cut price, just as a merchant finds it advantageous to clear his shelves by bargain sales, but the market is so organized that, as a rule, the laborer cannot, by price-cutting, stimulate an increase in demand for his services. He can sell his time at the going rate demanded by his competitors or he cannot sell it at all. Some decline of wages takes place in time of declining demand, but to a large extent labor is "deflated" in periods of depression by a decrease in the amount of labor sold rather than by a decline in its price.[1]

[1] This is much less true of agricultural than of industrial labor. Independent farmers lose by the decline of the price of their products, and the relationship between the employing and employed groups in agriculture is so close that even the hired laborer in this field of employment is relatively free from the risk of unemployment, and finds his wage fluctuating rather sharply with the level of prices for the products of the farm.

Whether labor, as a whole, gains by this custom of holding up wages in times of dull business and accepting unemployment is doubtful. There can be little doubt that a sharp readjustment of wages downward, in times of liquidation, would contribute greatly to the shortening of the ensuing depression. Laborers who are most certain of employment would lose; those who bear the burden of unemployment would gain; the net result for the time being would probably be a gain. Whether this gain would be offset by the difficulty of getting wages up again as

In any discussion of the causes of unemployment, a distinction should be maintained between the conditions which determine the amount of unemployment at any given time and those which determine the selection of individuals to bear the burden of the unemployment. The amount of unemployment in any industry is determined chiefly by conditions for which the workers in that industry are individually responsible to a trifling extent.

Unemployment arises chiefly from six causes: (*a*) seasonal fluctuation in the activity of specific industries; (*b*) cyclical fluctuation in the activity of business in general, as well as of specific industries; (*c*) the necessity of maintaining a reserve of unemployed labor in order to insure the smooth working of the industrial machine, as was pointed out in chapter ii; (*d*) labor troubles; (*e*) interruption of production from causes peculiar to the individual establishment, such as fire, bankruptcy, consolidation of plants, shutdown for lack of transportation or of raw material, overstocking with finished goods, and similar causes; (*f*) personal incapacity and inefficiency, and shiftlessness.

The factor named last is not co-ordinate with the other five, however, but overlaps them. The first five causes determine how much employment there shall be at a given time; the sixth helps to determine which individuals shall be left out. Assuming that the economic situation is such as to dictate the unemployment of 10 per cent of the labor supply, what determines which of the laborers shall make up this 10 per cent? In part, the answer is, chance. Shutdown on account of fire, for instance, affects the efficient and the inefficient alike. Reduction of forces on account of decline in the volume of orders, on the other hand, gives opportunity for a sifting of the labor force, especially where the number of employees is large, with the result that personal characteristics play a very large part in determining where the ax shall fall. Moreover, even in cases where the unemployment arises from conditions which affect a whole group of workers alike, the personal efficiency, the energy, and the co-operative spirit of the laborer determine in large part what shall be the duration of his unemployment. For the best workman, a position is usually to be found quickly; for the mediocre and the low-grade worker the loss

business revived one can only conjecture; it is a question of the relative importance of bargaining power and actual productive value in determining wage scales. A system of very elastic wage scales would make it possible for industry to pay higher average wages than it can now pay; the inelastic system makes it somewhat easier to compel industry to pay as much as it can.

of a job is much more likely to mean serious loss of time before employment can once more be obtained.

Not all the unemployment represents waste, either from the social standpoint or from that of the laborer. From the standpoint of society, the loss of time incident to maintaining an adequate reserve of labor, the unemployment incident to shifting laborers from time to time to more productive employment, and the time necessarily lost on account of seasonal fluctuations in business, are all parts of the cost of running the industrial machine, and are no more to be accounted wastes than is the time of laborers engaged in eating and sleeping.

From the laborer's standpoint, also, the loss of time incident to seeking and obtaining better conditions of work must be regarded as an investment rather than a waste.

In like manner, the unemployment which is the result of labor disputes represents, from the standpoint of the laborer, an investment intended to increase the selling value of part of his labor time by sacrificing the income from a smaller part. If the labor market were perfectly fluid, such dissipation of labor power would represent a sheer waste, for it would be practicable for anyone who was dissatisfied with the conditions of his employment to transfer himself to another field where the compensation and conditions of work were more satisfactory. The labor market, however, is an imperfect market; it is not practicable for the laborer who believes himself ill paid to transfer himself to another employment without loss of time, direct money cost, and considerable risk. Consequently, the effort to improve those conditions by interruption of service may well be, from the individual standpoint, profitable. From the social standpoint, it represents a waste just in so far as there exists a better method of insuring the adjustment of wages to changing conditions of demand and supply in the labor field. Certainly it is a cumbersome and expensive method of maintaining the relationship between wages in a given industry and the conditions which determine a fair wage in that industry; yet this loss cannot be labeled a complete waste till a better method of accomplishing its purpose is demonstrated to be practicable.

Of the causes of unemployment enumerated, the seasonal fluctuation is the most important, so far as numbers indicate importance, but the significance of this factor is greatly lessened by the extent to which it is compensated, either by wage rates or by the possibility of making profitable use of the idle time. The extent to which dovetailing of employment is possible depends chiefly on the technique of the indus-

try, and on the extent to which the amount and time of the employment is known in advance. Some occupations, such as coal-mining, unfit the laborer for the most accessible alternate employments; others, such as farming, do not interfere directly with the laborer's fitness for a variety of other employments, but coincide in their slack and busy seasons with most of the occupations in which alternative employment could otherwise be secured most readily; others, such as teaching, dovetail well with numerous other occupations which furnish profitable employment during the slack season.

The extent to which the rate of pay in any occupation adjusts itself to the worker's necessity of losing time, on account of seasonal fluctuations, depends on two factors, namely, the extent to which dovetailing is usually practicable, and the degree of certainty in the unemployment. Any condition limiting the total amount of employment, if it is certain, is fairly sure to be compensated for in the wage, but competition is not so effective in compensating for the uncertain but probable losses. Even if the wage in a given occupation adjusts itself so that the average compensation for a year's service is sufficient to cover idle as well as working time, it would still be true that many individuals would suffer from less than average employment. Moreover, if the amount lost by each individual is highly uncertain, it is much more likely to be under- than over-compensated for the average worker. The effect of the unemployment hazard on wages is merely to keep them high enough so that workers are willing to take the risk; if even a minority of workers overestimate the amount of employment they are likely to have, the wage adjustment may be such as to leave the average worker the loser. In practice, the adjustment of wages to irregularity in the volume of employment seems to vary widely from industry to industry, being most accurate in cases like teaching where the idle time is known accurately in advance, and least satisfactory in cases where a high degree of irregularity combines with a low standard of life and inadequate appreciation of the risk on the part of the worker.

Ways of dealing with the risk of unemployment are numerous.— Private employment agencies and newspaper advertising serve to shorten the interval between jobs by reducing the amount of work necessary for worker and employer to get in touch with one another. Scientific labor administration, including such devices as job analysis, rating cards, and all administrative methods and policies which aim at the creation of harmony and a spirit of co-operation within an industrial organization—all these serve to reduce the turnover of labor, and

incidentally the risk of unemployment. Public employment agencies aim to effect a more economical adjustment of demand and supply in the labor field than that effected by the private agencies. All plans for the stabilization of industry (with primary reference to the reduction or elimination of the cyclical fluctuation) include, among their objectives, the reduction of the amount of unemployment which characterizes the depression stage. Diversification of one's preparation, so as to make possible the dovetailing of employment, aids individuals to meet the exigencies of the situation.

Finally, it remains to consider the possibility of dealing with this risk through insurance. In most respects unemployment presents a good example of the kind of risk for which insurance offers a satisfactory palliative. The incidence of unemployment is frequent enough to keep the laborer alive to the importance of provision against it; it is not so great in amount that insurance against it involves a prohibitive cost; it affects different individuals at different times and from different causes, so that (in spite of the concentration of losses occasioned by a downswing of the business cycle) the catastrophe hazard is not a serious bar to the underwriting of the risk. The moral hazard would be very great if full protection were offered, but the insurer could be protected against this danger, as in credit insurance, by requiring the insured to bear a fixed "normal loss" and to coinsure for a fixed percentage of the remainder. Insurance to the amount of 50 or 60 per cent of wages for unemployment beyond a certain number of days (the number varying with the industry) would hardly stimulate a significant amount of deliberate unemployment.

The chief obstacle to the writing of such insurance arises from the wide variation in the hazard on different individual risks; the difficulty in measuring this difference; and the certainty of serious adverse selection in case such measurement is not effected and utilized in rate-making. If flat rates were charged, without attention to individual variations in employability, there would undoubtedly be a tendency for poor risks to insure and the good risks, the men who rarely have trouble in finding jobs, to carry their own risk. There is also to be considered the possibility that kind-hearted employers, confronted with the necessity of reducing forces, would deliberately select for dismissal those who were protected by insurance against unemployment. For these reasons, the ordinary form of insurance, which looks to the self-interest of each individual to induce him to take out such insurance as he needs, does not meet the situation.

On the other hand, some method by which whole groups of laborers might be insured, without opportunity for adverse selection, might serve a very useful purpose. One device, which has been used for the purpose in a number of cases, and appears possible of wider service in this way, is insurance through the trade union. Membership in a union depends primarily upon other considerations, so that there is no tendency for the poor risks to predominate among the insured; the amount paid is small enough so that there is no incentive to malingering, and the organization has better than average facilities for determining the genuinemess of claims against it.

The weakness of this method consists in the fact that the insurance feature of trade union policy is subordinate to other features, and is therefore likely to be sacrificed to attain some other end. In almost every instance where insurance benefits are offered by a trade union, the funds contributed by members for that purpose are commingled with those collected for other purposes, and are likely to be used for the promotion of ends which have no relation to insurance. From the typical trade-union official viewpoint, the insurance feature is a means of obtaining and keeping members, or collecting additional revenue from them, rather than a primary purpose of the organization. Were an attempt made to collect from the membership sufficient funds to cover adequately the risk of unemployment, the insurance feature would become so expensive as to weaken rather than strengthen the organization.

It does not seem probable that the risk of unemployment can be removed by voluntary insurance, paid for by the workers, either through the trade union or through a commercial insurance company. There remain the possibilities of insurance at the cost of the state, of the employer, or of some combination of these with one another or with insurance at the cost of the worker. Subsidized public insurance, both voluntary and compulsory, has been tried in a number of European countries, the most notable experiment being that now carried on by the British government under the Unemployment Insurance Act of 1920 (an extension of the National Insurance Act of 1911). Under this system, the cost of insurance is borne jointly by the employer, the employee, and the state. This joint support removes, in large part, the fundamental objection to a system of insurance which does not adjust the premium to the known difference of hazard in the individual case. With about 60 per cent of the cost borne by the state and the employer, even the individual who believes himself

to be a high-grade risk will not be so likely to complain of being overcharged when he is required to pay at the same rate as is charged his less employable fellow-worker, though in the case of the best workmen even 40 per cent of the average loss is probably an overcharge. The compulsory feature secures for the insurer a proper distribution of the risk. The contribution of the state is offset, in part at least, by the saving in poor relief, both public and philanthropic, which results from the operation of the insurance fund, and the effect of public relief extended in this way is perhaps less demoralizing than would be the case if it were extended directly as poor relief. The compulsory contribution of employers is defended on the ground that the cost of unemployment incident to the operation of a given industry is a part of the cost of running the industry, and ought to be so assessed as to appear in the price of the product, or in the profit account of the employer.

The weakness of the plan, aside from serious administrative difficulties, lies in the absence of any plan of merit rating by which the employer may be given an incentive to stabilize his operations, or the employee an incentive to increase his own employability. An insurance system which merely equalizes burdens is useful, but it falls short of its highest possibilities unless it does something to reduce the total amount of losses. It may be too much to expect that any practicable system of rating individual risks will give the worker more incentive than he now has to rise into the class of steady workers who are relatively free from the risks of unemployment, but in the case of the employer there seem to be distinct possibilities of gain in this direction. In the light of the great progress which has been made in recent years in the elimination of irregularities in the operation of industrial plants,[1] compulsory unemployment insurance which fails to reward or penalize marked departures from the usual proportion of idle time fails of its highest potential usefulness.

It may be added that the political organization of the United States makes it more difficult here than abroad to maintain a national system of unemployment insurance, with its necessarily minute research into local conditions; while state organization presents very undesirable aspects on account of the extent to which the employers of one state are in direct competition with those of another, while their employees are drawn from a common source and move freely from one state to

[1] For example, in this country by the Dennison Manufacturing Company and by the Joseph and Feiss Company.

another. Unemployment insurance under political control does not appear to be a probable development of the immediate future, in the United States.

Another possibility of the reduction of unemployment is the deliberate expansion of public works in times of depression. This plan offers the double advantage of equalizing the incomes of laborers, contractors, and others by furnishing them employment during periods of dulness in industry, and of offering a probability of economy, construction costs being lowest at such times. In so far as public works promise to serve a real social need when completed, and are at the same time not of so urgent a character as to make it inadvisable to wait for depression eras in order to undertake them, this plan is thoroughly sound. The chief difficulty in its practical application arises from circumstances similar to those which interfere with the concentration of construction work by corporations in times of low cost, namely the difficulty of financing enterprise at such times, or securing authorization to carry them forward. A time when general business is very slack and employment scarce is fairly certain to be a time when the burden of taxation is felt to be abnormally heavy, and legislatures and electorates are prone to economize at such times. Proposals to undertake heavy expenditures for purposes that are not urgent receive grudging support.

III. ACCIDENT AND OCCUPATIONAL DISEASE

The risk of industrial accident and occupational disease presents a problem both in social policy and in individual financial management which is very similar to that presented by unemployment. In each case there is a considerable element of risk which cannot be eliminated by preventive measures, and another considerable element which can be eliminated if proper incentives are given those who are responsible for the conditions under which industry is carried on, both employers and laborers. In each case the hazard varies greatly from one industry to another; and in each case the financial loss is divided between the employer, the public, and the laborers themselves. In each case the financial loss inflicted upon the majority is small enough so that no serious problem exists, while the loss in individual cases is so great as to make the hazard very serious. The variation of the risk from one individual to another, under like conditions of employment, is not as great as in the case of unemployment hazard, but is nevertheless so great that it is necessary to take account, in the determina-

tion of a wise policy, of the effect on the worker's incentive to exercise his best efforts to reduce the hazard.

The statistics of industrial accident are more complete than those for unemployment, and the loss shows a much greater degree of regularity from year to year. The number of fatal industrial accidents in the United States has been estimated at 25,000 for 1913, and 23,000 for 1919; those involving four weeks or more of disability at 700,000 for the former year and 575,000 for the latter.

The burden of the loss from personal accidents is distributed in various ways. Much of it falls directly on the workers affected; another portion probably falls initially on the employer through the necessity of paying higher wages in the more dangerous occupations; another part is assumed by the public in the form of poor relief, and through the cost of maintaining machinery for adjudicating claims arising out of accidents; another part is shifted to employers and others who may be responsible through voluntary or compulsory payment of damages, through payments under compensation laws, and through insurance against liability; some small part is distributed over the working group through the medium of private insurance. Some of these methods are of sufficient importance to warrant detailed examination.

There is no evidence that wage rates adjust themselves accurately to the risk of accident.—It has been argued that there is little need of public action with a view to allocating the burden of accidents more equitably, for the reason that competitive wages can be depended upon to equalize this, as it does other differences in the attractiveness of different forms of employment. The weakness in this form of argument is the assumption, first, that in practice the degree of risk associated with any form of accident is known to the parties to the wage contract well enough to make it a reasonable basis of adjustment of wages, and, second, in the assumption that even if such adjustment were effected the result would be to equalize the burden. It may be granted that if the number of accidents which will occur in each establishment could be predicted accurately, and were known to all prospective applicants for such employment, and all such applicants were rational in their choices, the wages paid would have to compensate the group as a whole for the total loss due to accidents, and the burden would fall either on the capitalists employing them, the consumers of the product of the industry, or, conceivably, on the public at large. Even then, as was pointed out in discussing

a similar situation in connection with the risk of unemployment, the result, in the absence of an effective system of insurance, would be to bestow extra compensation upon the majority who escape the hazard, and not to remove the burden from those who now suffer it.

But the outstanding characteristic of the situation is the absence of certainty concerning the amount of loss which will be incurred, and the certainty of selection adverse to the workers. For if some workers overestimate and others underestimate the risk, it matters not whether the average estimate is too high or too low. The effective amount of risk is the risk as estimated by those who, in numbers sufficient to man the industry, are disposed to rate it lowest. Familiarity breeds indifference, so that those who best know the risks of a trade are most apt to ignore them. Notoriously, many men have an unintelligent faith in their own good luck; others shrink from being thought afraid; and many are ignorant of the hazards involved in the pursuits which they choose. These are the men whose choices determine the excess of wages to be paid in dangerous occupations; the services of the timid or even the intelligently cautious worker are rarely needed in occupations where danger is really great.[1]

The accident risk is rarely covered by personal insurance by workers.— The same factors which obstruct any tendency for wages to adjust themselves to the hazard of a given employment also obstruct the progress of private insurance as a palliative. If workers underestimate the degree of risk in a given trade, they are not likely to pay the premiums demanded for insurance by an insurance company which must figure the risk conservatively high and add a loading for expense and profit. Moreover, in the absence of a definite assurance that wages are high enough to compensate for the risk undergone, the effect of insurance at the expense of the workers is merely to equalize the burden they are assuming without adequate compensation; it increases the burden for the group as a whole. Casualty companies do write a considerable amount of personal insurance to protect against the risk of accidents, but this is carried chiefly by professional and business men rather than by laborers.

Liability.—It was noted above that a part of the accident hazard is transferred to employers, or other responsible persons, through the

[1] Cf. A. S. Johnson, *Introduction to Economics*, pp. 205–7. A careful theoretical analysis of this question is found in R. M. Woodbury, *Social Insurance, an Economic Analysis*, pp. 56–70. Mr. Woodbury has also examined the statistical evidence, and concludes that the data are entirely inadequate either to prove or to disprove the existence of any tendency for wages to adapt themselves to the degree of risk.

medium of voluntary or forced settlement of claims for damages. The original theory of the common law does not distinguish the responsibility of employers from that of others; that is, they are responsible for such damages as may be caused directly by their fault or negligence.

This liability was, during the course of the nineteenth century, subjected to further limitation on account of the application, in cases involving claims for damage done to workmen by their employers, of defenses which would not be available in similar cases where the plaintiff was not an employee. These are, first, the defense of contributory negligence, the essence of which is that in cases where negligence on the part of both employer and employee is shown to have contributed to bring about the accident, no damages can be collected; the fellow-servant doctrine, which holds that an employer is not responsible for damage done to his employees through carelessness of other employees; and the doctrine of assumption of risk, by which the laborer is held to have waived his claim to damages if he can be shown to have had knowledge of the special hazard and accepted employment without a special agreement guaranteeing him compensation for such accidents as might result. The cumulative effect of these defenses was to make it extremely difficult and expensive for an employee to obtain compensation in such cases as make up the major portion of the accidents to which the laborer is exposed, and to place upon him the financial cost of numerous accidents which he could in practice do little to prevent.

During recent years, the situation has been changed through the general adoption of one or the other of two reforms, known respectively as employers' liability laws and workmen's compensation laws.

Employer's liability legislation (widely adopted between 1885 and 1910) is simply legislation designed to modify the liability of the employer, without abandoning the fundamental rule that the employer is responsible, just as anyone else is responsible, for the results of his own negligence. Some states have abolished the fellow-servant doctrine; others limit its application to certain industries or exclude from its operation injuries due to the fault of certain classes of employees. There have been also various modifications of the doctrine of contributory negligence, some states providing for a division of the financial responsibility, in cases where negligence is shown on the part of both parties; others placing the burden on the employer to prove contributory negligence instead of requiring the employee to prove its absence, as was the case under the common law.

The chief criticisms of the system of employers' liability as modified by legislation are, first, that it is unduly expensive in administration (on account of the necessity of suits to establish responsibility in a large proportion of cases); second, that it fails to place properly the cost of the accidents for which neither employer nor employee is directly responsible; third, that it has in practice provided compensation for only about one accident in eight so that the bulk of the cost of accident has remained with the working group, where its incidence has been most burdensome, and its effect least effective in stimulating remedial and precautionary effort.

Workmen's compensation.—During the years since 1910 a new principle has come to be widely accepted for dealing with this type of risk, known as the principle of compensation. The features which differentiate the compensation plan from the systems which preceded it may be summarized as follows: First, under compensation the presumption is in favor of assessing the cost of an accident on the employer instead of on the employee. In cases where neither the employer nor the employee is guilty of negligence, employers' liability places the cost on the employee; workmen's compensation places it on the employer. Second, workmen's compensation aims to provide, so far as possible, a fixed scale of benefits for each type of injury, the amount depending on the character of the disability, the amount previously earned by the injured worker, the existence or non-existence of dependents, and similar considerations. Third, compensation benefits are frequently made payable in the form of annuities, in order that the loss due to the death or permanent disability of the injured worker may be reduced by the replacement of his wages by a similar type of income; liability insurance, since it contemplates payment for a specific wrong already committed, favors immediate payment of damages in a lump sum. Fourth, compensation plans frequently recognize the desirability of requiring employers to protect their employees from the risk that the purpose of compensation may be defeated by the employer's bankruptcy or withdrawal from business.

Beginning in 1910, the principle of compensation found very rapid acceptance, and only five states, together with the District of Columbia,[1] now have no compensation laws. In many of the states listed as having compensation, however, the number of occupations excluded and in the few cases the existence of optional substitutes, reduce considerably the significance of these figures. The following recent

[1] In private employment.

summary indicates the wide dissimilarity between the plans now in use, the differences extending to almost every point where a difference is possible:

Compensation laws may be either compulsory or elective. A compulsory law is one which requires every employer within the scope of the compensation law to accept the act and pay the compensation specified. An elective law is one in which the employer has the option either of accepting or of rejecting the act, but in case he rejects the customary common-law defenses are abrogated. Of the 45 compensation jurisdictions (43 states, Alaska, and Hawaii), 14 are compulsory and 31 are elective as to compensation provisions.

Scope or coverage.—No state compensation act, even when full use of the elective provisions is taken into account, covers all employees. The principal exemptions, in the order of their importance, perhaps, are: nonhazardous employments; agriculture; domestic service; numerical exemptions, i.e., excepting employers having less than a specified number of employees; public employees, casual laborers or those not employed for the purpose of the employer's business; and employments not conducted for gain.

Occupational diseases.—Eleven states and the Federal Government now include occupational diseases among the list of compensable injuries. In most of these states all occupational diseases are compensated, but in some the coverage is limited to certain specified diseases and processes.

Waiting period.—In most of the states an injury to be compensable must cause disability for a certain length of time, no compensation being paid during this time. This noncompensable preliminary period is known as the "waiting period." The most common provision is that disability must continue for more than one week, this being found in 25 states.

Compensation scale.—In all but two states the amount of compensation is based upon wages. A number of states, however, provide fixed lump sums or pensions for certain injuries, but apply the percentage system to all others. A few states have varying percentages for different types of injuries, and in several states the percentage varies with conjugal condition and number of children. In 19 states the amount of compensation is 50 per cent of the employee's wages: in 3 states, 55 per cent; in 9 states, 60 per cent, in 3 states, 65 per cent; and in 9 states and the Federal Government, $66\frac{2}{3}$ per cent.

The compensation benefits are usually modified by weekly maximum and minimum limits which may materially affect the amounts. It is undoubtedly true that under no state compensation law does the employer bear 50 per cent of the cost of industrial accidents and in most states he bears but 20 to 35 per cent.

The benefits for death in most cases approximate three or four years' earnings of the deceased employee. Twenty-three states place a limit upon the maximum amount payable in any one case. These maximum amounts range from $3,000 to $6,000.

Most states recognize the fact that a permanently disabled workman is a greater economic loss to his family than if he were killed outright at the time of the accident, and consequently provide greater benefits than in case of fatal accidents. Eighteen states and the Federal Government provide that for permanent total disability compensation payments shall continue for the full period of the injured workman's life. Twenty-one states place a limit upon the maximum amount payable in any one case; these maximum amounts range from $3,000 to $10,000.

Partial disability.—Two methods for compensating partial disabilities are generally provided for. One method is based upon the percentage of wage loss occasioned by such disability, payments continuing during incapacity but subject to maximum limits. The second method is the adoption of a specific schedule of injuries for which benefits are awarded for fixed periods, the payments being based upon a percentage of wages earned at the time of the injury. Usually both methods of payment are provided for. The practice in most states is to pay a percentage of the wage for fixed periods for certain enumerated injuries and for all other injuries a percentage of the wage loss during disability.

Medical benefits.—Three states furnish no medical service except that in fatal cases involving no dependents the expenses of last sickness shall be paid by the employer. Seven states and the Federal Government provide unlimited service. Nine laws place no limitation upon the period during which medical treatment shall be furnished, but do limit the amount; while seven limit the period, but do not limit the amount.[1]

It remains to consider the extent to which the risk of industrial accident is reduced through the operation of insurance. Insurance to cover this risk has two quite distinct purposes. It may be taken out for the purpose of protecting the employer against the hazard he carries under either employers' liability or workmen's compensation, or it may be required by the state in order to protect workmen against loss from inability of the employer to meet his responsibilities under the law.

Liability insurance is voluntary.—Before the liability of employers was generally increased through the passage of the limiting legislation to which reference was made above, few employers felt it necessary

[1] Adapted from Carl Hookstadt, "Workmen's Compensation and Social Insurance," *Monthly Labor Review*, XVI (January, 1923), 158–69.

to protect themselves by insurance against the hazard of incurring liability for damages on account of industrial accident. With the passage of laws abrogating the customary defenses, however, the risk became so serious that liability insurance became very common, and it still is valuable in states where compensation systems have not been introduced, and also in the case of the numerous occupations to which compensation requirements do not apply, and in the cases where individual employers elect to refuse to come under the provisions of optional compensation arrangements. This form of insurance is written chiefly by stock companies.

Compensation insurance is in many cases compulsory.—Some form of guarantee of financial ability is required in nearly all the states which have adopted the principle of workmen's compensation. The most common requirement is that all employers who are subject to the provisions of the compensation law shall either insure with licensed insurance carriers, or else provide what is called "self-insurance," that is, satisfy the proper administrative body of their ability to carry the risk. Only eight or ten states make insurance absolutely compulsory, while four make no provision for guaranteeing the payment of compensation in case the employer becomes bankrupt or retires from business. In view of the long period during which compensation liabilities persist, some provision to assure the continuance of payments is highly important.

Three principal types of insurance are in use, namely, state funds, stock company insurance, and mutual insurance. In seven states, an exclusive fund is maintained by compulsory contributions from employers, and all compensation payments are made from this fund. In nine others, state funds compete with private agencies, and in the remaining states the field is occupied only by the private agencies.

Workmen's compensation is so new that it is hazardous to venture an opinion as to the relative desirability of the three plans. In theory, a monopolistic state fund, if efficiently managed, should be able to furnish the service more economically than a private carrier, with its large selling costs and limited volume of business. The state funds actually in operation have made an excellent showing. Such data as have been published (and several of them have been subjected to careful investigation) indicate that the cost of administration of accident insurance is lower in the mutual than in the stock companies, lower

still in the competitive state funds, and lowest in the exclusive state funds.[1]

The effectiveness of public administration varies so widely from state to state, however, and also from time to time within the same state, that the present body of experience is hardly sufficient to overcome the hesitancy of many students of public affairs to indorse an enlargement of the scope of state administrative responsibility. Where state funds compete with private funds, the private carriers succeed in obtaining a large volume of business, in spite of higher costs.

From the standpoint of the employer, the great advantage of the stock insurance company contract is its definiteness. The object of insurance is to remove uncertainty; a contract which relieves the employer of his responsibility in return for a contractual premium does this more effectively than does a mutual or state fund with its assessments dependent on the loss experience, so that many employers are willing to pay a somewhat higher average cost for the sake of greater freedom from uncertainty.

Rating in compensation insurance.—The systems used in making rates for insurance in compensation insurance are very complex. They involve the application of all three of the leading principles of rating which were discussed in chapter xiv in connection with fire insurance, namely, classification, schedule rating, and experience rating.

The starting-point in the determination of an individual rate is the manual rate, which is determined by a study of statistics of the accident rate for a given type of labor in a given industry, modified by differences of experience in different states, differences in the liberality of different state systems of compensation, catastrophe hazard, current state of business activity or depression, and profit to the insurer.

Such a manual rate, if scientifically calculated, should serve the double purpose of producing a sufficient amount of revenue to meet the requirements of compensation, and of distributing the cost as equitably as it can be distributed by advance calculation, without inspection of the individual establishment. It fails, however, to accomplish one purpose which it is very desirable to keep in the foreground of attention in all discussions of policy with regard to accident,

[1] Cf. Commons and Andrews, *Principles of Labor Legislation*, pp. 411–13 (Harper & Bros., 1920); Carl Hookstadt, *Comparison of Workmen's Compensation Insurance and Administration*, p. 97 (Government Printing Office, April, 1922).

namely to encourage activity designed to reduce the number of accidents.

Schedule rating is a system of individual debits and credits for favorable or unfavorable features of the individual risk. This type of rating does much to encourage the introduction of safety devices and the elimination of unnecessary elements of hazard in the physical surroundings of the workers.

Physical surroundings, however, are responsible for only a minor part of the preventable accidents; morale and discipline count for more than do any features of plant and equipment which can be listed in a schedule and checked up by the inspector. To take account of this factor, experience rating is sometimes used. This is a system whereby employers, who have a sufficiently large body of employees to establish a probability of uniformity in the loss experience, receive a modification of the insurance rate in the light of any marked departure of their individual experience from the general experience of the industry in which they are engaged. The obvious advantage of this system is that it gives a direct incentive to individual effort to reduce the accident loss; an incentive surpassed only by that which is present under so-called self-insurance. The disadvantage is that there is always present the possibility that an unusual run of good or bad luck will result in an adjustment of rates which is not justified by the actual conditions of operation.

CHAPTER XVIII

SOCIAL ASPECTS OF RISK-BEARING

In this chapter attention is directed to the question of the social usefulness of certain institutions whose uses in connection with the transfer and reduction of risk have been discussed in the preceding chapters. In this survey we shall consider, first, the social utility of the system of free appropriation of profit by private individuals. Next, we shall consider the ethical significance of three specific devices for dealing with risk, namely, gambling, insurance, and speculation. Finally, the whole system of modern industry and trade will be compared briefly with two other systems in the light of its tendency to increase or decrease the risk element in the lives of those who live under it.

I. SOCIAL ASPECTS OF PROFIT-TAKING

The profit system is so integral to the present organization of economic life that a discussion of its merits really involves the whole question of the merits of a capitalistic society, to which attention is given in a later section of the chapter. The present section does not consider possible substitutes for the profit incentive, but rather certain points at which that system is susceptible of modification without the abandonment of any of the major features of the economic order under which we live.

In chapter iii we indicated the relationship which exists between risk and profit. Profit, it was there shown, arises from the fact that the amount of capital which seeks employment in certain industries, or other opportunities for investment, is smaller than the amount which could be so employed in them as to earn for itself the usual return. The most frequent cause for such restriction of investment in certain lines is the existence of risk. We have not, in our previous survey of this topic, raised the question of the *justification* of the profit system. What we have done is to indicate in a very broad way the conditions which make it possible for the individual owner-manager to collect a profit. Socially speaking, there can be only one justification for profit, namely, its service as an incentive to individuals to undertake ventures where the outcome is uncertain. There is perhaps

no phase of our modern industrial organization which has been more acutely criticized of late years than this reliance on the motive of private profit. To many students the system seems calculated to foster the worst conceivable distribution of the world's goods—excessive wealth for the few and correspondingly meager returns for the many, while the service it renders as an incentive to productive effort seems unreal or at best of secondary importance. Is the criticism valid?

As with most questions of social policy, no final and absolutely conclusive reply to this question is likely to be formulated, for it involves comparing the partly known with the unknown, but we may find a basis for a judgment of probability in regard to it. In the first place, it seems clear that a limited amount of profit is socially useful, indeed if we are to continue the system of individual enterprise at all, is necessary. For unless those who place their capital in a position of hazard have some hope of making more than a normal rate of interest, capital for hazardous investment cannot be expected to appear. And in this sense almost all new enterprise and much of the extension of old and successful enterprise through new investments is to be classed as hazardous. Capital cannot all be put at interest. The existence of a "normal rate of interest" presupposes a guaranteed return on capital, and a guaranty on some capital is impossible unless there is other capital interposed between the guaranteed capital and the hazards of the business.

It does not follow, however, that because some profit must be anticipated, it must necessarily be realized in any given case, nor does it follow that the *whole amount* of the return above current interest must even be held up before the prospective investor as a possible reward for putting his capital at risk. Some oil wells would doubtless be drilled under a system of taxation which confiscated half the profits of the successful driller, without relieving him of any of his risk of failure, for the rewards of success in a limited number of cases are great enough to secure the capital, even though the odds against the investor should be greatly increased.

This is the theory of the excess profits tax, to permit a tax-exempt return high enough to compensate for the use of capital and take a large share of any excess, leaving the owner, however, some share of the excess return from risks successfully undertaken as an incentive to his further efforts. The graduation of the tax, so as to take a larger percentage of very high returns, while quite justifiable from the

standpoint of ability to pay, fails to take account of the probability that high returns are associated with high risk. An enterprise offering a high return and a high risk, if taxed at the same rate as another offering a low return and a low risk, may be equally attractive, but if the unsafe enterprise is taxed heavily on its successes, and gets no compensation for its failures, more conservative investments are encouraged at the expense of risky ones. An ideal, but probably impracticable, application of the principle would involve the adjustment of the rate of excess profits taxation so as to leave the owner a larger percentage of his profit in cases where the risk appears in advance to be larger.

Interference with monopoly profits is quite practicable and from the public standpoint desirable.—For instance, government has largely interfered with profit in the field of public utility service, where again and again the principle of a limited return has been imposed in place of the principle of individual freedom in the pursuit of profits, and industry has not been stifled. Here, however, it should be noted that the success of the limitation has arisen from the slight amount of risk involved in the furnishing of public services under conditions of monopoly coupled with steady and strong demand, and that in the fixing of a "fair return" due regard has been given, in form at least, to the degree of risk.

In this connection an interesting question arises relative to the method of calculating the investment upon which a fair return is to be allowed. Should the investor be allowed a fair return upon the amount he has actually invested in the public utility property, or should his return be figured upon the amount which it would cost to reproduce that property at present price levels? Both views have had numerous adherents, although it appears that, to a large extent, the position taken by advocates of both plans has been determined by the immediate situation rather than by any well-defined convictions, on the principle involved. In a period of rising prices, the friends of the public utilities are apt to be convinced that reproduction cost is a very legitimate basis of calculation, and defenders of the public interest to favor original cost, while in periods of falling prices, opposite points of view prevail.

The question is too large a one for complete discussion here, but its connection with the problem of risk reduction makes it necessary to consider certain angles of it. The following discussion brings out an aspect of the problem which has often been overlooked:

An even more serious objection to reproduction cost, or reproduction cost new, as it is sometimes called, is that it tends when applied to put public utilities in the class of speculative enterprises. The valuation used as a rate base, the "value" fixed by law upon which earnings may be made, when found by this method depends, among other things, upon the price-level. If a utility company can get its property valued by a commission using this method when prices are high it may reap great profits and at the same time conceal them from the public. If the valuation be made when prices are low, the company may suffer great loss and at the same time be thought by the public to be earning current returns upon investment. Suppose that a utility company assembled its plant in the late eighties of the nineteenth century, and that a valuation was made in 1894 or 1895. Prices had fallen in those years until it would have cost much less to reproduce a plant than to build it a few years before. A "fair return" upon the reproduction cost in 1895 would not represent the current return upon actual investment made a few years earlier. Again, suppose a plant assembled in the winter of 1914, and that valuation by reproduction cost new was made in 1920. It would, in 1920, cost to reproduce the plant about double the amount actually invested in 1914. A "fair return" at interest current in 1914 upon such a valuation made in 1920 would give the investors an enormous profit. Let us say that the plant in 1914 cost $1,000,000. Net earnings of 6 per cent on the amount would be $60,000. In 1920 the same property could be reproduced or duplicated at about $2,000,000. Six per cent on this sum would be $120,000. But since interest rates have also advanced, the company might insist upon and obtain permission to fix rates to yield 8 per cent. Eight per cent on a valuation of $2,000,000 would be $160,000, that is to say 16 per cent on the amount actually invested. By this simple expedient of a valuation, made to protect the public, the public would be called upon to pay a return upon twice the amount invested in the property, to tax itself in rates to give reality to this estimated value, and enable the owners to show a commercial value double the principal sum actually invested. Under a government control making use of reproduction cost new to find the value, the commercial value of a utility property would fluctuate with the rise and fall of prices. A certain sum would be put into the property, but how much the owners could earn upon it, the commercial value of their investment, would depend upon all the complex forces which are reflected in the price-level. How much the investment would be worth ten years after it was made would not depend altogether upon honesty and ability of management and confidence and support of patrons, but even more upon unforeseeable contingencies, forces beyond control of the management, all those accidents in different parts of the world which influence the movement of prices. Under such a control effectively applied, an investor in a public utility would gamble on the rise and fall of prices. Instead of utility properties attracting careful

investors, they would appeal more to that class who speculate in mines and oil propositions. A business owned by speculators is more apt to be "skinned" for the sake of immediate returns, than one owned by investors. It is to the public interest that utility properties be owned by those looking for a moderate and regular return upon investment. In the long run the public will get better service, if the utility properties can be developed so as to draw this class of investors. Reproduction cost new tends to defeat this end, and to make utility properties highly speculative ventures.[1]

While the main point in this argument is well taken, it should be noted that the speculative element which is introduced by the use of reproduction cost is a speculative element which is present in all ordinary competitive business. If the cost of building shoe factories goes up, existing plants can presently charge prices based on the competition of newer factories built at higher costs, and if the cost of constructing such factories goes down the older plants must sooner or later meet the competition of the new low cost plants, even though it involves the writing off of a large part of their investment.[2]

The purpose in the use of reproduction cost is simply to put monopolized business as nearly as possible in the position of competitive business, to gain for the public the rates the public would have to pay under conditions of competition. The case for the use of original cost, so far as considerations of risk are concerned, must rest on the contention that it establishes a *better* situation than would maintain under competition, better both for the investor and for the public because, while the average result in periods of rising and falling prices taken together should be the same, the amount of uncertainty would be greatly reduced under the original cost plan.[3]

[1] W. M. W. Splawn, "Reproduction Cost as a Basis of Valuation," *Journal of Political Economy*, XXIX, 162–63.

[2] It is of course not implied that the cost of building factories is an all sufficient explanation of a given level of shoe prices. All that is involved of price theory is the assumption that (*a*) a rise in building costs will retard the construction of factories till prices of shoes reach a level which justifies such investment; (*b*) a fall of building costs will correspondingly encourage building, so long as shoe prices remain high, and (*c*) the number of factories actually built is a direct factor influencing the output and hence the price at which shoes can be sold.

[3] If the difference between reproduction cost and original cost is due to a change in the general level of prices, the reproduction cost basis might lead to less uncertainty. Cost of service to the public and return to investors *in dollars* would fluctuate, but the fluctuation would be offset by changes in the purchasing power of the dollars.

It is dangerous to limit profits if risks are great.—The fallacy involved in reasoning over from monopolistic to competitive conditions is well illustrated by the difficulties which have been met recently in controlling rents. Within the last few years, numerous attempts have been made to apply the principle of a fair return on original costs to the rental of dwellings, particularly apartment houses, in a period when the cost of construction had greatly advanced. The difficulty in applying this principle to such an investment is that while the government can restrict the investor to a fair return on his original investment in a period of advancing costs, it cannot guarantee him that return in a period of falling costs, or at least has not proposed to do so. Hence, the builder is confronted with the dilemma that if prices advance, he will not be allowed to increase rents above the level of a fair return on his investment, while if costs go down, he will have to meet the competition of new buildings constructed at a lower level and take a loss as a result. Hence, the construction of apartment houses has been discouraged by the application of the principle of a fair return on original cost, while the application of this principle in the field of monopolistic public utilities has not had a similarly discouraging effect.

What is a fair return?—A question which arises in connection with the regulation of profit relates to the allowance to be made for risk. If we are to set limits to a fair profit, determining those limits by a consideration of the degree of risk involved, at what time is the risk to be estimated? Much of the current discontent with the profit system arises from the obvious fact that the businesses which are now most profitable are being operated, to all appearances, with a minimum of risk and, hence, with a minimum need for managerial ability. An old railroad or bank is an illustration. Should the maximum profit accrue to the old established successful business, whose managers have fewest risks to worry them? This attitude is expressed by two students of labor problems, as follows:

Do the owners and borrowers of capital assume all the risk? Profits accrue to them today because it is conceived that they are the initiators, responsible agents, and, if necessary, the losers in industrial development. That this is true as a general proposition seems plausible. And in certain fields, particularly in marketing new commodities, there *is* a risk that none but relatively few in the community are willing to assume; and the extension of industrial activities is at present wholly dependent upon their assuming it. But these cases can fairly be left out of consideration because of their relatively small number in proportion to the total production. Setting

aside these exceptions, and viewing the problem as industry exists today—not as it has been developed but as it stands today—the extent to which investors and enterprisers in industry assume risk is a matter as to which each case must be considered separately. The risk is one thing in a highly competitive business where the demand is new and destined to rise; it is another in a monopoly; it is still another in a declining business doomed to disappear.[1]

What is overlooked in this sort of reasoning is that every old conservative business was once a new and speculative enterprise, and the large and certain returns which these old strong businesses now collect are made possible by the risks they have already run, as well as by the risks others must now run to oust them from their position. Should they now be limited to a fair return upon their capital, they would doubtless continue to function, since the capital sunk in them cannot be recovered without loss, and since it is now exposed to comparatively little risk. Once the capitalist has successfully run his risk, he is at our mercy, and we can, if we will, reduce his return to correspond to the risks he still has to run, disregarding those that are past. But can we do this continuously and still secure new capital for enterprises which have yet to prove their merit? As Professor W. H. Lyon puts it:

How about an established business? Should the government be permitted to take advantage of "hindsight," and after the event has proved of a business that its promoters were justified in undertaking it, step in and say that the measure of return shall be the measure of risk now apparent? Or should the government make what we may call a retroactive estimate of the risk, and, from the standpoint of the present, attempt to measure the risk originally assumed? Human judgment cannot be counted on to be fair under such circumstances. It is so easy now to look back and feel sure that the telegraph, the telephone, the Union Pacific Railway, in fact, practically any established business, was bound from the start to be successful in a large way. Yet at the beginning of all these things there were more thousands who believed that the anticipated profits did not justify the risk to be taken than tens who believed that they did. It is impossible from the standpoint of the present to get the same view backward that the standpoint of twenty-five or fifty years ago presented forward. It is unfair to get the measure of reward for a risk assumed in the past by a present estimate of the risk now existing.[2]

[1] R. G. Valentine and O. Tead, *Quarterly Journal of Economics* (February, 1919), p. 248.

[2] W. H. Lyon, *Corporation Finance*, pp. 229–30.

Not only is it unfair, but as a general policy it seems certain to be disastrous, though it may take many years for the evil results to become evident. Nevertheless, it does not seem necessary to leave untouched every accumulation of profit, which either foresight or good luck has created. Nor is the question primarily one of the size of the profits. *The limits of social interference* (*aside from monopolies*) *depend chiefly on the question whether the profits arise in a way which might reasonably have been anticipated when capital was invested, or are of an unpredictable character.* The former cannot be attacked with impunity unless we provide some other incentive to capitalists to undertake enterprises where there is an appreciable risk of loss. The latter can frequently be confiscated or prevented without such discouragement to future enterprise, simply because they are recognized as being interferences of such an exceptional character as not to constitute a ground for fear of similar interferences in the future.

For example: if a British importer of wheat is not allowed his profit on wheat which he has already imported before the price rises on account of a crop failure in Minnesota, or a rise in ocean freight rates, he is likely to be deterred from making similar importations in future years when an exceptionally good harvest or a decline in freight rates may bring a loss from his operations. But if an extremely successful submarine campaign cuts off a supply of wheat which would ordinarily come into competition with his importations, and forces competitive prices in England to unheard of levels, government or public opinion may safely step in and deprive him of his fortuitous gain. The chance of a profit on account of the change in freight rates or a change in crop conditions entered into his calculations and will enter into them in the future. The possibility of profit from the total interruption of commerce with the outside world did not enter into his calculations and will not enter into his future calculations whether he is deprived of it on this occasion or not. Such profits are free gifts, and are at the mercy of society to deal with in such manner as expediency in the short run seems to dictate.

Profiteering is collecting profits which are socially unnecessary.— This distinction between the cases where interference with profits is to be justified by extraordinary circumstances and cases where such interference involves, or is likely to involve, an undermining of the incentive to further productivity on the part of capital, is at the basis of the concept of profiteering, of which we have heard so much in

recent years. To understand this concept it will be helpful to review its history.

In the medieval system of social philosophy, the place of profits was perfectly defined. Everything had its "just price" and anyone who made a profit must do so either by buying below the "just price" or by selling above it. Hence, all profit was illegitimate, and the middleman was necessarily a profiteer and a parasite. Necessarily an exception to this doctrine was allowed in the case of foreign trade because it was impossible for producer and consumer to meet, but such trade was regarded as exceptional. With the development of commerce in the later Middle Ages, and the increasing importance of capital in manufacture and the great expansion of opportunities for individual initiative in the early modern period, this doctrine of the immorality of profits disappeared. Public opinion swung to the other extreme, and profit came to be thought of as the inevitable, the just, and the socially beneficial reward of enterprise. The "business man" became the social leader.

With the development of monopoly in numerous fields in the latter part of the nineteenth century, the doctrine of the just price was partially revived in the form of the concept of a "fair return" to which reference has been made. Finally, during the Great War the old doctrine reappeared in another form, the social condemnation of *excessive* profit-taking as profiteering, and this sentiment found expression in numerous types of legislation and the other restrictive action both in America and Europe. The concept, however, was, and remains, an extremely vague one. Current literature abounds in the denunciation of the profiteer, but tests by which he is to be distinguished from the wholly estimable "successful business man" are almost entirely lacking.

Our ideals are changing, and change requires some groping in the dark, but the key to the problem is to be found in the distinction drawn between ordinary profits, that is, profits which were, or could have been, anticipated with sufficient clearness to constitute a motive for venturing into a risky field of investment, and extraordinary profits. If profits are attacked only rarely, and under color of public necessity, or are justified by their unusual size or their extraordinary origin, future enterprise may not be discouraged. If they are confiscated persistently and as a matter of public policy, some method of protecting investors against risk must be provided, or risky enterprises will be avoided.

Must risk and control be closely associated?—In chapter iii the effect of risk in the distribution of wealth has been discussed on the tacit assumption that the two functions of carrying risk and appropriating profit are in fact closely associated with a third, the *exercise of control*. The term *owner-manager* was used throughout the chapter instead of the term *entrepreneur*, generally used by economists, in order to keep this assumption from being overlooked. This assumption, which is an original basic theory of the modern type of private ownership in the means of production, underlies most of our law of property and also runs through most of our orthodox economic theory. In fact, the whole modern organization of production through a separation of "entrepreneurs" from capitalists and laborers is grounded on the assumption that the risk of loss from any undertaking can best be carried by those who are directly responsible for the policies which may bring about the loss, and conversely that the responsibility for control can best be exercised by those who carry the burden of risk. Our whole tradition of the right of the individual business manager to freedom from outside interference is derived from this conception, just as is our traditional acceptance of his claim to the entire profits of the enterprise. "Whatsoever a man soweth, that shall he also reap," is in theory the essence of the whole system of private property and free initiative. Partly because men are believed to work more efficiently when they themselves profit or lose as their enterprises prosper or decay, partly because we have felt it unjust for one man to suffer from the results of another's mismanagement, control of business has been delegated to the risk-bearing factor rather than the lending or laboring factor in the joint enterprise.

To a considerable extent, however, opinion has recently drifted away from this point of view. On the one hand it is recognized that the specialization of owners in carrying risk is at best only partial; that the laborer and the capitalist are exposed to certain risks because the entrepreneur is unable to bear the full amount of the possible loss. Hence, the theory that control logically associates itself with risk seems to demand a partition of control as a recognition of the extent to which risk is divided. For instance, the demand for "industrial democracy," in the sense of a share for labor in the management of industry, is in part a recognition of the extent to which labor shares in risk. Likewise the custom of placing bankers on boards of directors of corporations to whom the banks extend credit is a recognition of the extent to which lenders share in risk.

In the next place, it is recognized that there are limits to the extent to which the bearing of risk carries with it as a logical corollary the actual assumption of control, for the reason that the risk itself may be reduced by transferring control away from the risk-taker to a hired manager whose greater expertness offsets his lack of direct personal interest in his results. This situation, in large part, accounts for the tendency to increased complexity of organization, which has accompanied the development of large-scale business. In small-scale business it is still true that most investors insist on having either control or protection from the risk of unfortunate control by someone else, but there are many who in large-scale operations are willing as common stockholders to subject their capital to the major risks of business while retaining only the merest shadow of control.

In legal theory, of course, the common stockholders are the ultimate owners of the business, assuming the primary burden of risk and exercising the final control, but in the case of large corporations whose stock has been distributed among investors the control exercised by most of these investors is wholly imaginary. Actually the control is exercised by the relatively small group—officers, creditors, or active stockholders, who are interested enough and have ability enough to exercise it, and the results of the control exercised by this group fall only slightly on themselves. The investor's reliance is primarily on their good faith and ability as witnessed by past performance, not on any close association between the control and its consequences.

One important result of this dissociation between control and risk has been the wide spread of the practice of limited liability. An investor does not hesitate to intrust a definite sum of capital to another's control, but he will rarely accept the full responsibility of ownership in an enterprise, with resulting liability for its debts, unless he has a real voice in its management. Hence for enterprises too large to be financed by those who actually control them, the corporation and the limited partnership are devised. The investor in stock limits his liability to the amount he actually invests, or to a stipulated sum in excess thereof. The risk of which he divests himself by this means is scattered among the creditors.[1]

[1] Texts in elementary economics sometimes contain the question: "In a corporation, who is the entrepreneur?" It may not be amiss, therefore, at this point, to call attention to the impossibility of applying the concept "entrepreneur" to any part of a corporate organization (except in a close corporation which is managed like a partnership). The essence of entrepreneurship is the union of control and risk-bearing; in a public corporation these are not united

Another modification of our traditional policy of uniting control and risk is found in the numerous safeguards which have been erected for the protection of debtors. Bankruptcy laws, exemption of homesteads, of the proceeds of insurance policies, of the tools of a trade, and of minimum earnings from attachment for debt, all are ways of transferring part of the risk of business from the owner-manager to his creditors, in recognition of the fact that the enterprise is in fact a co-operative one, in which all have an interest and in the results of which all may be required to share, if a strict enforcement of the full responsibility of the owner-manager results in hardship.

The test of a wise social policy in this matter seems to be much the same as in the converse case of limitation of profits, to which reference was made above (pp. 362–63). What is the effect on incentive? The object of placing the responsibility on business men for loss of property intrusted to them by their creditors is to secure a maximum of interest and effort on their part and to induce lenders to part with their capital; if the proposed interference follows such exceptional circumstances that it will not enter seriously into the calculations of lenders or business men, and either retard the financing business or lead to wasteful management, it may be judged by its immediate value in relieving distress; if it extends to normally anticipated situations it will probably do more harm than good.

President David Friday has made an interesting suggestion looking to the elimination of the waste incident to the curtailment of production for business reasons, especially in times of falling prices.[1] He proposes that the government should establish an insurance fund to protect business men from the loss of their capital.

His argument, in brief, is as follows: The recurrent curtailment of production by business managers is to be explained primarily in terms of fear of loss rather than greed for high profits. Business men are willing to continue operation of their enterprises at times when the prospect of profit is small, provided they do not by so doing incur too great a risk of loss. To insure to each entrepreneur his actual costs, obtaining the necessary funds by taxation of successful businesses, would remove the incentive to stop production, and thereby prevent wastes of such enormous magnitude as would more than compensate for the social costs of administration.

[1] "Maintaining Productive Output," *Journal of Political Economy*, XXVII (January, 1919), 117–26.

Into the administrative difficulties involved in this proposal we shall not carry our criticism. The social waste of underproduction (estimated by President Friday at $10,000,000,000 per annum) is large enough to justify vast expenditure on any experiment which offers a reasonable chance of success in eliminating it. We can even afford to face the certainty of numerous individual cases of abuse, if the general result is to increase the national dividend by half of the sum involved.

More fundamental than the administrative difficulty, however, is the question of the ultimate social gain to be derived from the operation of the scheme, assuming that the difficulties of administration were overcome. Proposals to relieve the business man from the risk of losing his out-of-pocket costs assume that these risks have no social value; are they not on the contrary as essential in maintaining a proper balance in production as are the hopes of profit? It is quite true that it is the fear of loss rather than the smallness of profit that induces the suspension of production in periods of falling prices and diminishing demand, but such curtailment is a belated recognition that production in certain lines has gone too far. The elimination of the risk, would, it appears, tend to aggravate the tendency to follow the lure of immediate profit by producing to excess those commodities of which at the preceding moment there has seemed to be a deficit.

For example, it is now perfectly clear that at the close of 1919 the world had been producing too much of certain perishable consumption goods, notably sugar, textiles, and rubber tires, and not enough of such durable goods as houses, street cars, and bridges. This is the natural tendency of production at times when it is anticipated that over a long period the tendency of prices will be downward. Men are willing to pay high prices for the goods which they buy for the immediate future, but balk at paying peak prices for permanent construction. Everyone recognized that the nation was understocked with buildings and public utility properties, long before it was clear that it was overstocked with perishables.[1]

When the latter fact became clear, production slackened, in the one field, then gradually revived in the other. If the result of a

[1] It is not implied that this was the only factor involved. Another factor, for instance, was the great difficulty in getting higher prices out of the public for such staple necessities as transportation, rent, and gas. It does not appear likely that this situation would have been alleviated by public knowledge that the corporations and individuals furnishing these necessities were protected by insurance against business losses.

guaranty of costs would have been to divert productive energy sooner from the field that was overdone to the neglected field, a great national gain would have resulted from its adoption. It is clear that this would not have been true, however. As things actually stood till the end of 1919, the risk of producing sugar seemed less than that of producing street cars; if this risk had been removed by social insurance it would still have been true that the prospective profit of producing perishables would have been greater than that of producing durables. Might not the result of insurance of costs have been to prolong the maladjustment by removing the fear that actually brought about the readjustment, leaving us with a still greater overstock of sugar and understock of trolley cars when the readjustment finally came?

Insurance of costs seems to look to the immediately disastrous effects of readjustment of malproduction; a sound social policy should look to a prevention of the maladjustment, and in the author's opinion, is to be secured rather through the development among business men of an appreciation of the risks involved in following blindly the guidance of prices, advance orders and profit margins, rather than through the elimination of those risks.

The interest of society is not merely to secure the maximum expenditure of energy by productive agents; it is to direct those agents to the creation of the goods which satisfy a real need, and it does not seem probable that the assumption by a government agency of the risk of loss, leaving undisturbed the forces which fix the relative profit margins in various lines of business, will notably improve the apportionment we now secure. For it will very frequently be true that the line of activity which seems to offer a prohibitive risk of loss, and therefore is neglected, will also offer the minimum opportunity of profit, and therefore be neglected even though the risks are removed. Such an arrangement would favor the highly speculative undertaking, by giving the entrepreneur a chance at a very high profit without a corresponding risk of loss; otherwise it is not clear that it would have any marked effect on the distribution of social energy.

Finally, the effect of subjecting investment and operation to such a degree of public control as the insurance program would involve is dubious. President Friday believes that the government would refuse to permit suspension of operation and consequent unemployment if it were in the position of a guarantor of cost; is it not on the other hand probable that the insurance bureau would be inclined to demand the suspension of production whenever it appeared probable

that such operation would result in loss, thereby aggravating the evil against which a remedy is sought?

II. THE ETHICS OF GAMBLING

An estimate of the social significance of the group of institutions through which the transfer of risks is accomplished may conveniently proceed by a consideration of certain aspects of gambling, of insurance, and of speculation. These three types of activity have this much in common, that all consist of the transfer of wealth from one person to another in a way which is contingent upon an unknown, usually a future, event. Between a short sale of wheat and a bet that the price of wheat will fall, or between a fire insurance policy and a bet that a certain house will burn, there is superficially a close resemblance; an analysis of the difference between them must get back of the form to the social and individual consequences.

In chapter vii, we gave attention to opportunities of profit involved in gambling, without consideration of the social and moral aspects of the question. It remains to consider the justification of the traditional condemnation of gambling as immoral. Is it purely a question of balancing the risk of loss against the individual's enjoyment of the excitement, or are there more important social considerations? The following points are suggested as having a bearing upon our answer:

a) *The gambler is in an antisocial position.*—The whole drift of social evolution throughout the recorded history of the race has been toward the development of moral standards, of legal and political institutions, and of other agencies of social control to enforce co-operation; that is, to induce or compel the individual to seek his own advancement through activities which tend to the advancement of other members of his group. The gambler, however, gains only as others lose. The traditional attitude of hostility toward the gambler rests, therefore, on much the same ground, though its expression is less extreme, as our hostility toward the confidence man and the burglar. The more efficient any of these become, the poorer the rest of the world becomes, and the more surely the rest of the world must organize to restrain the antisocial activity.

b) *Energy devoted to the improvement of the gambler's technique is, socially speaking, wasted.*—A universal energizing of gamblers or a general introduction of scientific management among them would leave them and the world no better off, for one gambler's gain in efficiency would be offset by another's. In this respect the gambler's

position is analogous to that of the militarist, the political stump speaker, and the proselyting apostle.[1]

c) *Gambling tends to disqualify one for work.*—On the one hand the successful gambler finds money coming so easily through the pursuit of chance that it seems a waste of time and energy to hammer out an income by the slow and painful processes by which most of the world makes its living. On the other hand, the unsuccessful gambler finds the fruits of his labor slipping away from him and becomes discouraged and is apt to pin his fate to a turn in luck rather than to a return to productive employment. So long as the world's business cannot be conducted without work, any institution which tends to reduce the number of competent workers is socially undesirable. In this respect gambling is comparable to the institution of inheritance.[2]

d) *The sum total of gambling transactions involves a net social loss*, for it tends to increase inequality of wealth, and unequal distribution of wealth decreases its utility. Suppose A and B bet counters on the toss of a fairly balanced coin. If they play a long time the most probable theoretical result is that they win the same number of tosses and quit as they began. But, if the number of counters they hold is small, the chances are that before they toss a thousand times one of them will be out of counters and the game will stop. If they start even it is of course as likely that one will survive as the other, but if one has more counters than the other the game is loaded in his favor. If A, for instance, starts with 100 counters and B with 10, the chances are that before they make a thousand tosses B will run out of counters and have to quit. If he has to reserve some of his counters for some other purpose, he is so much the more certain to quit a loser, though his loss will not be so great. If he reduces his stakes when his fund begins to get low and increases them as it grows, as he is very likely to do, the odds are against him still more, for every run of luck against

[1] These analogies are of course imperfect, for the increased zeal and efficiency of rival propagandists does tend to bring out the truth, however much they may as individuals seek to obscure it.

[2] For more emphatic statement of this point cf. "The Social Evil," *Outlook*, June 28, 1912, p. 246. "Gambling likewise isolates the risk and excitement that are found as an element in all legitimate enterprise; and by artificial devices provides for the constant recurrence of that excitement apart from any useful work or worthy undertaking. Nature retaliates by taking from the man who tries to cheat her the inclination and the power of steady industry; the true sense of social value; and makes of him a burden to his family, an irritable and worthless parasite upon the industrial order."

him will have to be made up by a longer run in his favor, while a run in his favor will be wiped out by a shorter run against him.

This is probably the most important reason for the very large percentage of failures not only in gambling but in all speculative enterprises where the duration of the individual transaction is short and the scale of operations can be increased readily. For instance, note the cases in industry and trade in which one year of depression has taken away the profits of several years of prosperity. The expansion of operations made possible by the war profits makes the scale of losses on the way down bigger than the scale of profits on the way up.

e) A perfectly fair gamble is bad economics.—Say A, having $1,000 stakes $100 against $100 on a fair and legitimate 1:1 chance. He is balancing the chance of increasing his fortune to $1,100 against the chance of reducing it to $900. But in accordance with what economists call the "law of diminishing utility," he will lose more if his wealth is cut to $900 than he will gain if it is increased to $1,100, for the tenth hundred provides for more urgent needs or wants than does the eleventh. So with each addition to one's wealth. The more he has, the less the importance of one more unit; the unit the gambler may lose is of greater importance than the one he may win.

The larger the unit staked in proportion to the total owned, the more important this point becomes. Loss of one's entire fortune causes a far more important change of status than does doubling it. On the other hand, if the unit staked is relatively small the point is of no importance. The difference between the utility of the 999th and that of the 1,000th dollar is entirely negligible. Indeed, in some cases the argument may be turned the other way. Suppose A buys a lottery ticket for ten cents, which gives him one chance in 5,000 of winning $500. Mathematically the bet is an even one; economically it may be in his favor, for the dime he will probably lose represents no perceptible impairment of his capital or lowering of his income, while the prize he may possibly win will bring him a perceptible benefit. This will hold even if he pays fifteen cents for the ticket. The bargain is now a good one for both the buyer and the seller (indirect moral and social losses being disregarded). The lottery thus affords a means of collecting from a great number of persons amounts so small that their psychological cost is negligible and combining them into units large enough to give a few people a perceptible addition to their

material welfare. The advantage of this sort of gamble to the buyer of the small chance depends on his rigidly limiting not only the size but the number of his purchases to such an extent that the loss, which is overwhelmingly probable, will mean nothing in his standard of living. This is very difficult to do, but if he succeeds the real odds are distinctly in his favor.

f) Nothing that has been said should be applied to the case of the professional gambling-house keeper. He is not necessarily a gambler at all; he is a business man selling entertainment and taking his pay through a percentage in his favor in the arrangement of odds. His risk is not the gambling risk at all, it is the risk common to all lines of business of failing to get enough business to cover overhead costs, with the added necessity of getting a certain volume in order to insure the working of the law of averages on which he depends for his income.

g) Against these clear costs and dangers of gambling there can be set simply the fact that a very large proportion of the race in all ages have found it enjoyable, and have been willing to pay the cost of supporting an expensive body of devices and organizations to enable them to gratify their taste for this form of excitement. The foregoing of this enjoyment may be a necessary part of the cost of building an organization in which men can live together with the minimum friction and maximum satisfaction, but it is none the less a cost.

In summary: the moral condemnation of gambling must rest not on its economic irrationality, for it may in many cases be defended as rational, either on the ground that the stake is so small as to involve no real loss, or on the ground that the amusement is worth the cost. The final condemnation or indorsement of this practice must rest on our judgment of the importance of the effects it produces on men's ability and willingness to co-operate in the building and maintenance of a better social structure.

In the author's opinion, the weight of the argument rests with the opponents of gambling; the traditional condemnation of the practice as immoral reflects a sound judgment of the social issues at stake. Whether, however, gambling belongs in the list of immoralities which an intelligent social policy seeks to prohibit by legal enactment, or whether it is one of the far more numerous types of antisocial conduct which can more wisely be discouraged by education and moral suasion only, is an entirely different question. Any attempt to answer this question would take us too far from the field of the present study, into considerations of the limits of effective coercion in human conduct.

III. THE ETHICS OF INSURANCE

As was stated above, an insurance contract is not dissimilar in form to a wager. The insured pays a small premium, which he may lose or may receive again multiplied many-fold, in accordance with the outcome of an uncertain event. But, though the form is the same, the moral aspects of the question, provided a genuine risk is insured, are exactly opposite. The insurance contract serves to decrease risk, to substitute a small but certain loss for a large uncertain one. Thus a net gain results, parallel to the net loss involved in a gambling contract. We noted above that a perfectly fair gamble is economically unsound for the reason that the gain, if one wins, is smaller than the loss if he loses, because of the operation of the principle of diminishing utility. The case of the insurance contract is just the opposite. Ignoring insurance company expenses and profits, let us assume that A pays \$10 for \$1,000 of fire insurance, knowing that the chance of his suffering a loss of \$1,000 is exactly $\frac{1}{100}$. Mathematically, his bargain is neither good nor bad; economically, it is good because the \$1,000 he may lose represents more in real sacrifice than one hundred times the loss of the \$10 involved in the payment of the premium.

Likewise most of the other arguments advanced in the preceding section to show the antisocial character of gambling, have no application, or a negative application, to insurance which covers a genuine risk. Neither the insurer nor the insured puts himself in a position where his gain depends on the other's loss; rather they have a common interest in the non-occurrence of the event insured against. Energy devoted to the improvement of the insurance technique is not wasted, as is energy devoted to the improvement of the gambling technique; insurance does not tend to disqualify one for work, but rather encourages one to labor in the confidence that he will not be deprived of the fruits of his labors by some accidental circumstance; insurance does not tend to create inequality of wealth.

On the other hand, whenever there is no genuine risk to be hedged, as is the case in overinsurance, and in the case of insurance on the life of persons who have no producing power, the arguments cited against gambling have full force. The following account of the early history of life insurance illustrates the possibility of using the insurance contract for purely gambling purposes.

> The distinguishing feature of the age was the "Gambling" tendency of nearly all the Offices. Under the title of "Insurance Wagers," every conceivable description of speculation was entered into. The duration of the

lives of persons believed to be on their death-bed, was a common hazard, and the author of *Every Man His Own Brother* was not far wrong when he said the dissolution of persons, who saw themselves insured in the public papers at 90 per cent, was, not unlikely, hastened by such announcements.

Even the morality of the newspapers of that day was shocked by such proceedings; we find the *London Chronicle* of 1768 thus declaiming, "The introduction and amazing progress of illicit gaming at Lloyd's Coffee-house is, among others, a powerful and very melancholy proof of the degeneracy of the time. Though gaming in any degree is perverting the original and useful design of that Coffee-house, it may in some measure be excusable to speculate on the following subjects:—Mr. Wilkes being elected member for London: which was done from 5 to 50 guineas per cent.:—Mr. Wilkes being elected member for Middlesex, from 20 to 70 guineas per cent.; Alderman Bond's life for one year, now doing at 7 per cent.:—On Sir J. H. [mark the modesty!] being turned out in one year, now doing at 12 guineas per cent.; —On John Wilkes' life for one year, now doing at five per cent. N.B. Warranted to remain in prison during that period:—On a declaration of war with France of Spain in one year, 8 guineas per cent." "But," continues the sensitive journalist, "when policies come to be opened on two of the first peers in Britain losing their heads at 10s. 6d. per cent, or on the dissolution of the present parliament within one year at 5 guineas per cent., which are now actually doing, and underwritten chiefly by Scotsmen, at the above Coffee-House, it is surely high time to interfere."

In the *Public Advertiser* of Dec. 6, 1771 [then the leading newspaper], we find the following paragraph:—"We have the pleasure to assure the public, from the most undoubted authority, that the repeated accounts of her Royal Highness the Princess Dowager of Wales being very ill, and her life in great danger, are entirely false; *such reports being only calculated to promote the shameful spirit of the gambling by insurance on lives!*"[1]

IV. THE ETHICS OF SPECULATION

The case for organized speculation is midway between that for insurance and that for gambling. The speculative contract which transfers to speculators the risk which some one must carry anyway is analogous to insurance in that it relieves one party of risk and enables him to do business more economically and efficiently. It is inferior to insurance in that the insurer does not as a rule get rid of the risk by combination. The total amount of uncertainty-bearing is not reduced, but the incidence is shifted to those who voluntarily elect to carry it. Incidentally, as was noted in chapter xi, the service of

[1] Walford, *Insurance Guide and Handbook*, pp. 27–28. (4th ed.; Charles & Edwin Layton, London, 1901.)

risk-bearing, so far as the whole group of speculators are concerned, is probably uncompensated, so that society as a whole gains at the expense of the speculative group.

If the personnel of the futures market were made up entirely of hedge buyers and sellers, it would not be a speculative market at all; it would be simply a convenient device by which, on the one hand, industries using grain or cotton as raw materials, and, on the other hand, dealers in those commodities, could trade with one another, the needs of the one group for protection against falling prices being offset by the need of the other group for protection against rising prices. Unfortunately, the needs of dealers in raw materials and those of manufacturers who need to buy hedges do not coincide in time nor necessarily in volume. Consequently, a futures market without speculators could only be run through some such process as this, that if at a given season there was an excess of supply of hedging contracts from producers of, or dealers in, the raw materials, over the number required as hedging purchases by manufacturers, the price would be forced so low that manufacturers would be induced to contract in advance for their supplies of raw material, thus taking the load off the market. Vice versa, if there were an excess of demand for hedges from industries and a consequent high price, prospective sellers of hedges might be induced to sell their contracts in advance. Such a development would not mean the elimination of the speculator, however; it would merely mean that dealers and manufacturers had been given an inducement to become speculators themselves. To a large extent, something like this does happen, but it is not at all clear that there is any social advantage in having the speculating done by people who are also dealers in raw material or products rather than by specialists in speculation. Certainly the presence of a group of speculative traders who are ready on occasion to take either side of the market, facilitates the hedging process by making the market broad and continuous enough so that the hedger is able to make his trades with confidence that a contract once opened can be closed out again without breaking or "bulling" the market. As a practical issue, there can be no hedging without speculation.

It is undoubtedly true, however, that in a large number of trades neither party is hedging; there are only two speculators, one trading for a rise and the other for a fall. If all the trades were of this character, the social results would be exactly the same as those outlined in the case of gambling contracts. There is in speculation the same

unwholesome dissociation of income from useful work as in gambling; the same consequent undermining of the sense of the values of money and of work; the same eagerness to profit by another's misfortunes; and the same temptation to risk more than one can afford to lose, and to seek to recoup one's fallen fortunes by dishonest means.

The question whether a speculative market serves to increase or decrease the net amount of uncertainty resolves itself into a question concerning the proportion of trades which are purely speculative in character. No data bearing directly on this question are available, but the indirect evidence indicates that a very large part of the trades on the American exchanges are purely speculative.[1] But it must be remembered that a hedging trade may be made between two speculators, neither of whom has any idea of ever owning anything to hedge. Suppose that A, a flour-miller, buys a line of May wheat from B, a speculator, in order to cover a forward contract for the delivery of flour; then gradually sells out the contracts as he delivers the flour. Some of his contracts may remain open for five or six months. But B has no intention of staying "short" for such a length of time. He buys in his contract from C, and forgets all about the transaction long before A is ready to close it out. C, in turn, buys the contract in from D, D from E, and so on, the "short side" of the contract passing from hand to hand till finally it is bought in from a grain house which remains short till delivery date and then fulfils the contract by delivery. In the meantime, however, A may have decided to close out his last remaining contracts. He sells to X; X sells to Y, and so the "long side" of the contract passes from hand to hand till it reaches someone who is willing to accept delivery, or possibly is bought by a speculator who has already sold it short at the other end of the line, and so is canceled out. Most of the intermediate holders of the contract were speculators, not hedgers, yet each played an essential part in the hedging transaction by carrying for a part of the time the risk which had to be carried by someone all the time. It is difficult to see how the situation would be better, from the social standpoint, if one speculator carried the risk clear through than it is with a succession of speculators

[1] Arthur Richmond Marsh estimated some years ago that not over 25 per cent of the trades made through the cotton futures market were speculative. (*Annals of the American Academy of Political and Social Science*, XXXVIII [September, 1911], 276.) But the estimates given in chap. xi, concerning the volume of futures trading, indicate that even if it is figured that every bushel of grain is hedged three times on its way from the farmer to the baker the number of direct hedging trades is a minor fraction of the total volume of exchange trading.

each carrying it for a short time. Certainly it is much easier to find someone able and willing to carry the load when facilities are offered for getting out of the trade at will.[1]

To summarize this discussion: the same possibility of using a contract either for the purpose of hedging a legitimate risk or for the purpose of creating a gambling risk which we saw in the Lloyds contracts arises in connection with "future contracts" on the produce exchanges. When a grain merchant sells a future contract to hedge against a fall in prices while he is marketing his purchases of cash grain, or a flour-miller buys a future contract to protect himself against loss while he is manufacturing flour which he has agreed to deliver, he is securing protection against a definite risk in much the same way that one secures protection against an incalculable hazard through a Lloyds policy, but in both cases the only way that the insuring or hedging individual gets rid of his risk is by transferring it to someone else who assumes it as a speculation. The whole machinery of the produce exchange finds its justification in the facilities which it affords for carrying on certain types of business with a minimum risk and consequently at a minimum cost. There is no question that it is sound business policy to make use of the hedging market whenever a hedging contract can be secured on reasonable terms, but the existence of a hedging market presupposes the existence of a group of speculators who take the risk off the business man's shoulders, and there has as yet been found no way to prevent these contracts being bought and sold in a purely gambling spirit. A, the speculator, in relieving B of risk certainly performs a valuable service for society, but A does not know whether he is relieving B of risk or buying contracts from C who is speculating on the opposite side of the market, and if the result is to impoverish A or to bring him unexpected "easy money" the effect is quite as demoralizing as when similar occurrences take place through the medium of the race course or the roulette wheel.

In any case it is clear that the *mixing* of speculation with other types of business is likely to be bad for the other business. No business man thinks of employing his surplus funds during a slack season in writing insurance policies on his friends' property, and the employment of surplus funds in speculation by business men in general in

[1] The reader will not fail to notice the parallel between this process of passing on the risk of price changes and the practice at Lloyd's by which underwriters reinsure all or part of a marine risk when they apprehend that a loss has taken place.

order to furnish other business men with protection against price fluctuations is quite as unsound. This is true, not so much because the man who speculates as a side line lacks expert knowledge, but simply because it diverts energy and time from the principal business into the side line, and, more important, creates a new and unnecessary hazard affecting the working capital of the principal business. Society needs speculators, but the proper source for speculative funds is the accumulation of surplus funds in the hands of those who are not actively engaged in other business and can afford to take a series of losses without flinching in the expectation of making it back in the long run. The great weakness of present-day speculation is that there are too many people furnishing speculative contracts who, either on account of the needs of their other lines of business or on account of absolute limitation of funds, cannot stick through the long run and are "wiped out" by the first or second unexpected turn of the market.

So much emphasis has been laid upon the service of exchanges in making hedging possible, that there is danger of overlooking the fact that an exchange is a market, and as a market has a function to perform in bringing about such an adjustment of prices as will, on the one hand, clear the market within a crop year of substantially the entire crop, and, on the other hand, stimulate an increase or decrease of supply by producers in harmony with changing conditions of consumers' demand. As was pointed out in chapter xii, such adjustment is effected in part through manipulation of the carry over, but this method is effective only for absorbing minor fluctuations in demand. Both the adjustment of the carry-over and the slower but more effective adjustment of production and consumption are effected chiefly through the agency of price; the question whether organized speculation assists in such adjustment is therefore of primary importance.

The tests of a satisfactory price level are, first, does it adjust itself quickly and smoothly to changes in the demand or supply situation as such changes become known, and, second, is it relatively free from fluctuations which are not the result of such changes. On the one hand, it is desirable that any change, whether an increase or a decrease, which is to be caused by a given condition, shall take place as soon as possible after that condition becomes known. If, for instance, a crop shortage necessitates a decrease in consumption, it is better that such decrease shall be brought about as early in the preceding crop year as possible, in order that the carry over from the fat into the

lean year may be large enough to equalize the consumption. In general, the sooner a change in price occurs the less violent it need be; the price-making function of the speculator is to anticipate changes of price-making conditions, and by his purchases and sales expedite the adjustment of prices to them. If his anticipations are correct, his purchases will be made in advance of increases in price which would ultimately occur anyway, and his profit may be regarded as a compensation for facilitating the adjustment; if his anticipations are wrong his losses are the penalty he pays for obstructing the adjustment. The amount of the profit or loss in the individual case bears no relation to the value of the social service or damage rendered, but as the most of the profits of the successful come out of the losses of the unsuccessful, society, outside the group of speculators, has no direct concern with the size of the individual profits and losses.[1]

It may be added that the operations of a skilled group of forecasters, whose purchases and sales hasten the adjustment of prices to their normal level, tend to reduce the risks of trade, for the reason that buyers of grain and other speculative commodities, even if they do not hedge, carry a somewhat smaller risk of adverse changes in price if the market is so organized that prices at any given time reflect the consensus of skilled and informed judgment concerning the demand and supply situation. This point is of more importance, however, in connection with stock speculation, and will be discussed in that connection in a later paragraph.

The conclusions just set forth, in regard to the tendency of speculation to reduce the fluctuations of price by hastening their approach, rest entirely upon theoretical reasoning. It would be desirable, if possible, to fortify them with statistical evidence, but the facts available are entirely inconclusive. So many other factors enter the situation alongside the influence of speculation that it is impossible to isolate the effects of this particular factor.[2]

[1] Cf. Lavington, "The Social Interest in Stock Exchange Speculation," *Economic Journal*, XXIII, 36–52. Professor Lavington correctly indicates that in specific cases the speculator's services are enormously overpaid, but does not note that the rewards of successful prognostications, which promote the adjustment of prices to their theoretically correct level, are chiefly paid in the form of penalties by those whose unsuccessful prognostications retard such adjustment.

[2] The possible methods of approach seem to be four: to compare prices of the same commodity at the same time in different places; to compare prices at the same market, or in similar markets, at different times; to compare prices of different grades of the same commodity during the same period in the same market; and to

One other point must be considered, the ethics of short selling. Frequently the short seller is condemned for "selling what he does not own"; "causing depreciation in the value of other people's property"; and "dealing in fictitious commodities." Analysis of what the short seller does fails to sustain the attitude which is expressed in these invectives. Inherently it is no more evil to cause a decline in the value of other people's property than it is to cause an increase, if the decline or increase is caused by a change in the condition of the market and not a change in the usefulness of the property itself. The price of anything represents a compromise between the interests of the buyer and of the seller. If a short seller forces prices unduly low, he may injure those who have occasion to sell during the time of his influence, but he correspondingly benefits those who buy during the same period. Moreover, whatever he sells he must later buy, so that the net effect of his sales and purchases is neither to increase or decrease prices; it is merely to increase the turnover, just as is the case with the specula-

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compare prices of different commodities whose markets are in most respects similar except that some have and some have not facilities for speculative trading. None of these methods is satisfactory. If we compare prices of the same commodity in different parts of the world, we meet the difficulty that the prices in the non-speculative market are directly influenced by those in the speculative market, and vice versa. If we compare the prices of different grades of the same commodity, we meet the same difficulty; the prices of the grades deliverable on contracts and those not so deliverable are interdependent. If we compare the range of fluctuation of prices before the introduction of future trading with the range since, we meet the difficulty that the introduction of organized speculation has been accompanied by other changes, such as the introduction of telegraphic communication, the establishment of grading systems, the improvement of transportation and storage, and the auction system of buying and selling, which collectively far outweigh in importance the advent of the speculator. Comparisons of the price fluctuations of similar commodities, such as wheat and rye, present the difficulty that the prices are not entirely independent of one another. It is quite probable, however, that some light may be thrown on the question by more careful study of this last kind of evidence than has yet been made. For a recent attack on the question, cf. Boyle, *Speculation and the Chicago Board of Trade*, pp. 122–24, 219, criticized by the author in *Journal of Political Economy*, XXIX (January, 1921), 82–83. Brace, *Value of Organized Speculation*, p. 58, and Emery, *Speculation on the Stock and Produce Exchanges of the United States*, p. 127, conclude from rather scanty evidence that speculation has probably increased the stability of prices. Usher, "The Influence of Speculative Marketing on Prices," *American Economic Review*, VI, 49–60, concludes that the problem is not susceptible of direct statistical solution. Cf. Chapman and Knoop, "Effects of Anticipation in the Cotton Market," *Economic Journal*, XIV, 541–54.

tive buyer who later sells all that he buys. What really breaks a market during a bear raid is the selling of weak and timid owners who do not reappear as buyers.

If the short seller can frighten real owners into selling out at the bottom, he is enabled to cover his sales at a profit; unless they do so he can never profit by a fall in prices of his own making. The practices of buying on narrow margins, placing stop-loss orders, and trading on market gossip and surface indications are responsible for much more weakness of markets and artificial depression of values than is short selling.[1]

The other criticisms of short selling need no extended refutation. "Selling what one does not own," in order to profit by a fall in price, is no more intrinsically immoral than is buying what one does not want to own in order to profit by a rise. "Dealing in fictitious commodities," as has been shown in chapter xi, expresses a misconception of what actually takes place in a futures market. The popular distrust of the short seller is a good example of our tendency to distrust the mysterious. Short selling is as useful as speculative buying. Both are useful just in so far as they express an intelligent judgment of the probable trend of prices.

Speculation in securities.—The case for organized speculation in securities presents quite different features from those with which we have just been dealing. The advantages of this sort of speculation relate not to the maintenance of facilities for the direct shifting of risk to specialists, as is done in hedging and in insurance, but to the maintenance of a broad market through which securities may readily be bought and sold without the necessity of bidding them up in order to purchase or offering them down in order to sell. As was shown in chapter vii, such a broad market makes possible the elimination of an important kind of risk, namely the risk that the investor will not be able to get his money back when he needs it; and at the same time makes it possible for the corporation which uses the capital to remain free from the risk which would result from an agreement to repay it on demand. The free shifting of investments through a stock market, or for that matter through an active "over-the-counter" market, is facilitated by the presence of a body of speculators who stand ready

[1] This argument is much more significant in the case of speculation in securities than in the case of commodities, as the investment buyer is much more responsible for the price level in the security market.

to buy or sell on slight changes of price, though their services are not as essential as they are in a commodity exchange.

Speculation in securities, whether organized or unorganized, affords an illustration of specialization in risk-bearing much more complete and minute than that which is secured through the produce exchanges. Each individual carries securities involving the amount and kind of risk he prefers; as securities change in character they are passed on from one group to another. Normally, as a corporation grows older its securities grow less speculative; the exchange facilitates the process of passing them on, till they reach the status of high-grade investments and leave the speculative market to rest in the strong box of the conservative investor. The most conservative investments have usually passed through a speculative stage, and there are only two ways in which they can be carried through this period—either by speculators and speculative investors, or else in the hands of a comparatively small group of persons close to the management who have more faith in the enterprise than the general public has any cause to display.

Short selling is not as essential to the work of a stock exchange as it is to a commodity exchange, but its effect is, on the whole, to facilitate the adjustment of market price to the known elements of value. As was noted in connection with a similar feature of the commodity markets, such an adjustment decreases the risk of the investor. Most buyers of securities are not able to inform themselves thoroughly in regard to the stability of the corporations whose securities they buy, and must, to a large extent, rely on the price itself as a guide in determining their selections. Many buyers establish a definite policy of buying no securities whose yields do not fall between certain fixed limits. They make their selections in large part on the basis of the risk indicated by the yield, assuming that if the yield is very high or very low there must be some good reason for it.

This is far from being an ideal method, but it is probably one of the best which is available to the average investor, provided the yields are determined in a genuine competitive market. Unless such a market exists, however, the method breaks down completely. Short selling makes it much more difficult for anyone to maintain an artificially high price for a security, and then sell it to investors on the strength of the apparently favorable market rating evidenced by the price itself.

The value of this protective feature of the security markets would be much greater if some method were devised by which short sales could be made safely in a larger number of securities. As the case stands now, a speculator may be quite right in his judgment that a certain security is selling at too high a price, and must sooner or later decline, yet it may be unsafe for him to sell it short because of the risk that the floating supply will be bought up by someone who will then refuse to make loans of stock for the use of short sellers.[1]

The cases where the services of the short seller would be most useful are those where securities are being distributed by underwriters at what the informed know to be unduly high prices, yet the most of the certificates are still in the hands of the underwriters, so that it is impossible for short sellers to break the market down to its proper level. The uninformed are permitted to buy the security on the strength of the high quotations established by manipulation. Short selling is practically confined to a few active securities.

In the light of the considerations set forth above, we may agree with the judgment of a leading economist that speculation has both benefits and evils, but the benefits accrue chiefly to the general public, while the evils accrue to the speculators themselves. One adverse feature of the situation, however, remains to be considered.

We have emphasized above, and economists generally have emphasized, the service of a body of expert speculators in studying the indications of coming change, and expressing their judgments in purchases and sales which tend to bring the level of prices as soon as possible into line with all the known facts. Economists have not, however, generally recognized the opposite tendency involved in the fact that speculation, especially organized speculation, gives these same students a financial incentive to conceal the facts of which they become cognizant.

Suppose a certain speculator obtains advance information of facts, which when made public will inevitably raise the price of certain commodities or securities. He cannot take advantage of his knowl-

[1] As this is being written, the Piggly Wiggly case furnishes an excellent illustration. Stock which could be bought for December delivery at $55 was selling in March, 1923, around $75, obviously an artifically high price. Yet short sellers who attempted to take advantage of this situation suffered severely because they found themselves unable to get a sufficient supply of loanable certificates to keep themselves "short" until the partial payment stock could be secured.

edge except by purchases, and purchases tend to cause the rise to occur at once, which is socially desirable. But if he can induce others to sell freely until he has completed his purchases he can make them more advantageously; thus he has a financial incentive to keep his news secret, and to do what he can to stimulate a belief that prices are actually going down. This direct incentive to speculators to become spreaders of darkness instead of light goes very far to offset the social advantage of having prices influenced by the judgment of special students of the market outlook.

Finally, there can be no doubt that from the social standpoint much of the energy which is spent by speculators in study of the behavior of organized markets, and much of the time of brokers and their employees, represents sheer waste. The function of scrutinizing the news for indications of coming change in the security markets is valuable, but it is greatly overdone, and too largely intrusted to those who have no qualifications for doing it well.

Land speculation.—The case of land speculation is worthy of special attention because there is a very widespread belief that the land speculator is especially deserving of condemnation as a parasite. There seems to be no basis for the assumption that the land speculator's social significance is particularly different from that of any other speculator, or that he can make a profit out of price changes except by promoting those uses of land which are socially most desirable.

In the case of land which can be rented and fully utilized during the time it is being held by a speculator, as is generally the case with farm land, there is no waste of social resources; the rental value of the land is no greater and no less than it would be if the land were held by a permanent investor. The social problems involved are those generally associated with tenancy.

In the case of land which cannot be put to productive use till it is improved and is being held unimproved by a speculator, there is apparently a waste of resources, and it is in connection with this type of land speculation that the system of free buying and selling has been most condemned. Yet no speculator has any incentive to hold land out of service any longer than is necessary in order to reserve it for its most productive use. If a speculator believes that ten years from now his lots will be worth enough to justify putting a \$100,000 building on them, he cannot afford to put a \$10,000 building on them now, unless the smaller building will pay for itself in ten years so that it can be scrapped without loss to make way for the more productive

use. In such a case it is socially desirable to hold the land out of use.

In general, if the speculator is right in his judgment that his land will be worth enough more some years hence to pay interest on what he could get for it now, plus a profit, society gains by having the land held out of use till that time. If, on the other hand, the most profitable way to use the land, in the long run, is to improve it at once, and then scrap the improvements later to make way for better ones, it is to the speculator's interest to do so or to sell to someone who will. Here, as in other types of speculation, the line of greatest profit coincides with the line of social interest. Speculators may, and often do, retard the use of land for purposes for which it is desirable that it be used, but they lose money by so doing.

Of course, what has been said above concerning the possibility of profiting by dissuading others from following the line of their best interests, withholding from them valuable information, and disseminating errors, applies here, but it is probably of less importance than it is in the case of the organized markets.

V. RISK-BEARING AND THE SOCIAL ORDER

In any evaluation of our social machinery for dealing with uncertainty, the largest question involved is the rating which is to be given the present economic order as a whole, from the standpoint of its tendency to reduce or increase the element of risk. One of the chief objects at which men are aiming in their economic efforts is the attainment of security. Does the economic system they have established promote this purpose reasonably well?

The question is not answerable, even in theory, unless it is so restated as to involve a direct comparison between the economic order under consideration and some other order, either historical or hypothetical. Viewing the economic system of free enterprise merely as an isolated phenomenon, without consideration of any possible alternative system, the observer is equally justified in rendering a verdict highly favorable or highly unfavorable. One man is filled with amazement and admiration that the system works as well as it does; another is aghast that it does not work better; there need be no difference of opinion between them as to the actual facts of the case at all. Their difference of attitudes is merely aesthetic. As soon, however, as a comparison is attempted between the present order and some other order, we have some chance of reaching a rational judgment.

Practically speaking, there are only two bases on which a judgment of any interest concerning the efficiency of the modern capitalistic organization can be formulated: namely, a comparison with the medieval small-scale non-competitive and non-speculative economy; and secondly, a comparison with the socialized large-scale non-competitive, non-speculative economy which, in some form, is preferred by most radical critics of our present-day organization.

As compared with the situation which prevailed before the introduction of the machine technique, corporate organization, extensive commerce, and complex finance, the case is far from clear. In relation to the hazards which arise from man's ignorance of the workings of nature, the average man is more secure than were his ancestors. Public and private facilities for the maintenance of health are far better than ever before in the history of the world; weather forecasting has greatly reduced the hazards of storm and flood; dangerous animals have been driven far from the homes of most men; better food, better clothing, and better shelter make man independent, as never before, of the powers of physical nature. The hazards of war also, in spite of the formidable evidence to the contrary, are probably less than was the case when our scientific knowledge and economic interdependence was less. War grows more spectacular, but less frequent, and though the weapons of war grow more deadly, the diseases of the camps kill fewer and fewer.

Let us consider next the risks of maladjustment of production and marketing. It is obvious that modern methods of production involve a great deal more uncertainty with regard to the exact coincidence of desire and supply than did the simpler type of organization. When the medieval gildsman made a pair of shoes for his neighbor, he knew before beginning work that a market existed for the shoes. And even earlier when he was acquiring his skill or establishing his shop, he knew pretty accurately the course of demand for his product during the period when the acquired skill and capital were to be used.

When goods are made by the modern factory process, on the other hand, there is no exact knowledge of the coincidence of the productive effort and the desire for its fruits. When the clothing manufacturer starts the process of making a suit of clothes, he does so in the faith that somewhere in the world is a man of the size and shape to fit that suit, and that the paths of the suit and the man will cross at the exact moment when the man desires to purchase a new suit of clothes. Viewed from the standpoint of the single transaction, such an effort looks hazardous in the extreme.

The degree of hazard is not to be estimated, however, on the basis of the probability of the single transaction's turning out well, but on the basis of the average result as estimated in accordance with the law of large numbers. And from this standpoint the broader the market, the less the risk. If of 5,000 suits that were sold last year, 9 per cent were of a certain size and 17 per cent of another size, there is slight probability that the proportion of men of these sizes in the next group of 5,000 buyers will differ widely from the preceding result. As the number of cases grows larger, the percentage of error grows smaller. The individual varies, the crowd remains the same. It is only the exceptional individual, who in size or shape fails to conform to the mass, whose wants cannot be supplied by the method of mass production.

Most problems of risk reduce themselves finally to these two types: Does the increase in the value of a commodity, which will result from its being transported to another point in space, promise to offset the costs and risks of the undertaking? Does the increase in value anticipated from transferring a commodity by storage to a remote time promise to offset the costs and risks involved in the undertaking? In the case of transportation, the direct and calculable cost is the more serious factor; in the case of storage the risk element is more likely to control, but in both cases the principle is the same; the anticipated increase in value must equal the actual known costs of the operation, plus the probable cost or loss multiplied by the fraction which represents its probability. What communication is to the difficulties of space, forecasting is to the difficulties of time; what transportation is to the difficulties of space, storage is to the difficulties of time.

One of the first effects of the expansion of business into its modern form was a great increase in the space area involved within the calculations of the single unit. In the beginning this expansion of space involved an increase of risk. When wool was raised in northern England to be woven into cloth in Belgium, and worn as clothing in London, Paris, Spain, and Denmark, it was impossible for an individual who was responsible for the early stages of the productive process to know the conditions at the point where the later stages would be carried through, and the result was the injection of a large element of risk into men's calculations.

The later course of capitalistic development, on the other hand, has been in the direction of eliminating space risk. Rapid transporta-

tion and improved communication through postal, telegraph, telephone, and radio service have made a continent, so far as effect of space upon risk is concerned, smaller than an old-time county. The trader buying wheat in New York for export has Liverpool quotations no more than ten minutes old, and even in markets for less standardized commodities and in dealings with remote parts of the world, the factor of ignorance due to distance has been reduced to a fraction of its former importance.

On the other hand, the risk from the other type of extension of the market has tended to grow more and more important. The modern productive processes not only involve a wider range of territory but a greater scope of time. Between the opening of an iron mine in Minnesota and the purchase of the resulting needle by a housewife in Texas, much time must elapse, and the effect of time is to multiply the possibilities of miscalculation. And our technique of reaching into the future to secure a basis for our calculations is vastly inferior to our technique of reaching across space, with the added complication that, whereas goods shipped in error from one point to another can generally be shipped back, goods carried through in error from one point of time to another can never be returned.

To these considerations two others must be added. The risk of loss in a given undertaking depends not only upon the amount of hazard to which the capital or acquired skill invested in it will be exposed before the normal completion of the undertaking; it depends also upon the completeness and rapidity with which the investment can be rescued in case the adverse conditions appear. This is chiefly a question of the degree of specialization. The capital invested in an office building or a building suitable for light manufacture can be utilized without tremendous loss if the enterprise in connection with which it was originally invested proves a failure, whereas the capital invested in a steel plant, a stock of pogo sticks, or an equipment for manufacturing five-inch shells can be utilized for few other purposes in case the calculations of the investor prove false. It is at this point that the indictment of insecurity against the modern organization has most force, with reference both to the investment of capital and the investment of time in fitting one's self for a particular type of labor. The unskilled laborer is dependent for his support not on the continuance of the particular industry in which he is employed, but on the continuance of activity of business in general. But the pastry cook must lose his investment of time in acquiring skill in manu-

facturing a given type of dessert as soon as public taste turns to a rival delicacy.

Finally competition may bring loss to the individual even when it brings gain to the group. All competitive business involves ineradicable elements of risk. We improve the merchant's technique of studying the market, and we increase correspondingly the number of things he must know. We may develop a technique of forecasting price changes, but if we share the technique with those to whom we sell and those from whom we buy, the difficulty of squeezing a living out of price fluctuations remains unchanged. If we establish a hedging system to relieve the merchant of the risks of price changes, presently competition narrows his margin of profit so that his certainty of an adequate return for his efforts is again removed. If we make the trader's lot more secure by creating insurance companies, police forces, and other agencies for relieving him of risk, we attract more traders into competition with him. Efforts to make competitive business safe for all who engage in it are like efforts so to improve the standards of athletic coaching in a community that no one will lose any more contests.

It is a striking fact, however, that the number of persons subject to the risks of the market and of competition has vastly expanded. We release the farmer from the grip of manorial custom, and leave him free to experiment with new methods which may greatly increase his income, but which may ruin him. We free the peasant from the soil and send him out to seek his fortune; he may rise much higher than his ancestors ever dreamed of rising, but he may also much more easily sink to pauperism. In granting opportunity, we have imposed risk. The average standard of living of the agricultural laborer has advanced greatly, but the variation in status has increased still more.

In other departments of life the same thing is true. The guildsman, the monk, and the soldier of the precapitalistic era all found their place in life as members of organizations; they rose or fell chiefly as those organizations rose or fell. Modern individualism has cut the bonds between individuals, and given them the possibility of *choice*, and with free choice goes increased risk.

The question of the relative value of medieval and modern organizations, from the standpoint of the risk involved, is therefore an open one. The range of uncertainty has for most men increased, but the uncertainty arises largely from the possibility of better things; whether

these possibilities are worth the risks they entail is largely a matter of the individual's preference as to the kind of world he wants to live in.

The question of the incidence of risk in a socialist state, as compared with that in a capitalist state, is too large for complete analysis here, because of the extent to which a final conclusion in regard to it depends on estimates of such unknown variables as the effect of the abolition of independent business opportunities on the caliber of men offering themselves for public office, and the effect of the socialization of productive property on the individual's feeling of responsibility to do faithful work. All that we shall attempt is a consideration of the direct effect of the change to a socialist organization on the amount of uncertainty involved in the productive and distributive processes.

Clearly, a well-organized socialist state *could* remove much of the uncertainty in man's life. It could, as a military organization does, place men in definite positions from which there would be little chance of their escaping either for better or for worse. The risks of production and of the commodity market would be borne by the group as a whole, and in large part eliminated by combination; the risks connected with the market for one's individual skill and energy could, if the controlling minds desired, be eliminated by cutting the connection between the demand for one's service and the rate of one's wage.

On the other hand, such an organization might as readily operate on the basis of an unequal distribution of the community income to laborers of various kinds, with free competition between individuals for the higher paid and more difficult positions. If this latter method were followed, the uncertainty of the individual's economic future might be little less than it is at present.

Or, quite possibly, a compromise might be effected whereby the amount of individual liberty and consequent individual risk would be less than it is at present, yet greater than it would be if all tasks were apportioned solely by political methods, and income was divided equally or by some method not directly connected with the scarcity of the kind of service which the individual could perform. Our own federal civil service offers, in those who have remained in it past middle life, an excellent illustration of the possibility of an economic career which is touched with the minimum amount of uncertainty concerning tenure, compensation, and conditions of work; opportunities for such riskless endeavor the socialist state might easily multiply.

Outside the market for individual services, the chief difference between the risks of present-day industry and those which we would anticipate under a socialistic organization would arise from the elimination of the risks which arise from the tendency under competition for individuals alternately to accumulate and reduce stocks in anticipation of price changes. This tendency, which, as was shown in chapter v, is the major cause of the cyclical tendency of business, seems to be inescapable so long as individuals make their business decisions each in ignorance of what the others are deciding on the basis of the same evidence. Any system of centralized control of production, whether arising from governmental monopoly or from private monopoly, could in large part escape this weakness of the competitive system, and save a considerable portion of the waste which attends the alternation of excessive activity and stagnation in the industrial process.[1]

[1] In view of the extent to which current theory ascribes the cyclical tendency in business to the "pecuniary" organization of society, it may be well to examine the probable effects of socialization more carefully. By the term "pecuniary organization" there is designated, rather inaccurately, the system of directing production in such a way as to produce the maximum profit for business men; in other words, the attempt to produce those things for which the social demand, as expressed in offers of payment, is the greatest, relative to the costs incurred. A socialistic organization would face the necessity of making a similar adjustment of supply to demand, but not necessarily to demand as expressed in offers of purchasing power (though if purchasing power were equalized the chief objection to the method would disappear).

Whether production be adjusted to demand as expressed by offer of purchasing power, or by the ballot, or by the results of statistical investigations by experts, or by any other method, the critical point in determining whether the cyclical tendency would be eliminated, seems to be the question of centralization of control. A private monopoly controlled by the pecuniary calculus would be freed from the tendency, if its business were not interdependent with that of other businesses which are subject to the tendency; on the other hand, in fields where adjustment requires time a group of independent producers all controlled by a philanthropic desire to direct production into the channels of greatest social efficiency would be subject to the cyclical tendency if they made their decisions independently and on the basis of their knowledge of the same general situation.

QUESTIONS

1. The ultimate effect of improvements in business methods is usually to lower prices to consumers, yet society depends on the self-interest of business men, through profits, to secure the adoption of improvements. Is this rational?
2. Profit is sometimes stated to be a compensation for the "irksomeness" of riskbearing. Discuss.

3. Can you cite cases where profit is collected without either monopoly conditions or significant risk, (*a*) temporarily? (*b*) permanently?
4. Formulate a general statement of the conditions under which profit is socially useful.
5. It is frequently assumed that the placing of control in the hands of those who carry risk tends to prevent recklessness in the conduct of business. Does the history of governmental business enterprises confirm this?
6. Under a socialistic organization, who would take the risks incident to the introduction of new methods?

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